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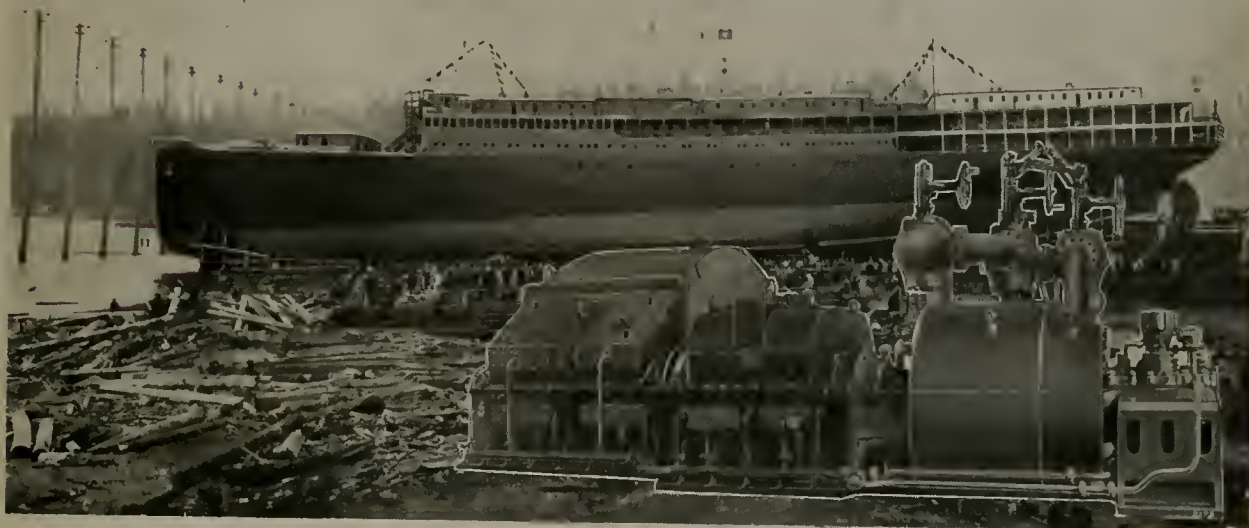
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Pacific Marine Review

The National Magazine of Shipping

21st Anniversary

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VESSELS fitted with De Laval turbines and gears make better speed, require less fuel, are easier to handle, and are more reliable than those having any other forms of power plant. De Laval geared turbines weigh least and occupy least space and, in general, are the most economical.

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S. S. BOSTON and S. S. NEW YORK, built by Bethlehem Shipbuilding Corporation for Eastern Steamship Line,

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Pacific Marine Review

The National Magazine of Shipping

576 Sacramento Street, San Francisco

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James S. Hines,
President and Publisher.

Bernard N. De Rochie,
Vice-Pres. and Manager.

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TWENTY-ONE YEARS

A Pictorial Record of the Pacific Coast During the Life of Pacific Marine Review, and an Attempt to Project that Record into the Future

THOSE were good days twenty-one years ago, when Pacific Marine Review made its initial how to a Pacific Coast shipping audience in the seaport of Seattle. The very first issue of the infant magazine congratulates the Pacific Coast ports on "great growth during the past fifteen years," on trans-Pacific services, grown during that time from "one line operating five steamers out of San Francisco to fourteen distinct lines serving every port on the Pacific." Seattle and the Puget Sound territory were just beginning to settle down to normal trade with Alaska after the gold rush. Jim Hill had just started work on the two greatest freighters in the world for trans-Pacific service. The cruisers South Dakota, California, Milwaukee, and Tacoma were nearing completion at the Union Iron Works, San Francisco, and the battleship Nebraska was on the ways at Moran's, Seattle.

In those days the American-Hawaiian Steamship Company was operating a regular schedule with steamships on the long route through the Straits of Magellan. Almost coincident with the birth of Pacific Marine Review came a startling announcement from this American steamship service that was to revolutionize marine engineering. The steamer Nebraska was fitted with oil burners and, using California oil, made the trip from San Francisco to New York without refueling, tests on the way showing that "the resulting financial gain to the company from all causes was at the rate of \$500 a day." All causes represented time of ship saved, gain from reduction in fire room crew, additional space and deadweight capacity for cargo.

Also at about the same time over in Germany the late Dr. Rudolph Diesel was beginning to get really practical results with the motor that seems destined to eliminate boiler troubles and fire room crews, and that is now occupying the very center of the spotlight for marine engineers the world around.

Those were great days too in the academic treatment of shipping problems. Discussion was, if anything, more free then than it is today, and every shipbuilder, shipowner, ship broker, or ship operator had his own pet theories as to solutions for problems and cure-alls for ailments of our merchant marine. We note with interest that a certain Ira Campbell, "well recognized proctor in admiralty," was conducting a "Legal Log" column in early issues of the "National Magazine of Shipping," and that Captain William W. Bates, former commissioner of navigation, was contributing a series of articles on "The American Marine."

It is of record, also, that at the time of our advent a Merchant Marine Commission, composed of five senators and five representatives, were touring the Pacific Coast and were "formulating a bill, for presentation to the next Congress, having for its object the rehabilitation of our ocean-going merchant marine. This commission included the late Republican leaders Lodge and Penrose, and Winthrop L. Marvin "was the unanimous choice of the commission for secretary, which is a deserved compliment to this loyal and energetic worker in the cause of the merchant marine."

One burning question then, as now, was the extension of coastwise laws to the Philippines, and all Pa-

SEATTLE

The picture reproduced herewith is taken from an illustration that appeared on the frontispiece of the first issue of Pacific Marine Review and shows the waterfront of Seattle with the city in the background. Note that all the piers are of timber construction and that no skyscrapers appear in the down-town section. Since this picture was made, Seattle has become one of the fastest growing cities and seaports in America and has achieved some wonderful results in the way of waterfront improvements, as will be seen by reference to pictures on pages 2 and 3 of this issue.





VANCOUVER

The port of Vancouver, British Columbia, is the western terminus of the Canadian Pacific Railway System and hence becomes the port for the splendid Oriental passenger steamers operated by that system. Our illustration shows the waterfront as it appeared twenty-one years ago. Today this waterfront boasts two of the largest commercial terminals in America.

PORTLAND

The commercial capital of Oregon for the Columbia River and its tributary streams, Portland is rapidly forging to the front as a port for larger ships. Our illustration, taken twenty-one years ago, shows that at that time the ocean commerce of this port was largely confined to windjammers, for here we see twelve of the picturesque square-riggers lined up on a small section of the Portland waterfront.



cific Coast ship owners were looking forward eagerly to the time when they "should feel the permanent benefit certain to accrue when the coasting laws go into effect in the Philippines in 1906."

Does this editorial have a familiar ring? "Never during the long years that the great shipping question has been agitated has Congress and the nation been wrought to the present pitch. Let us strike while the iron is hot, rather than waste time in academic discussions. Again let those who deny the importance of a national merchant marine remember that it is the merchant marine of Great Britain as a factor in commerce, as a carrier of the ocean mails, and as an element in national defense that makes her, while a mere speck on the world's map, an Emperor in the world's councils."

We read on another page that at the "hearings before the Merchant Marine Commission little attention is paid by those testifying to the problems before the commission of how to get and retain an American

merchant marine," but "ship builders want more vessels to build, ship owners want more employment for vessels, exporters and importers want lower freights, those now giving employment to foreign ships want no American vessels whatever, and discourage any action of Congress, capitalists want subsidies, sailors want only union men and no Asiatics employed, shipwrights, machinists and boiler makers want more work and higher wages," and yet then as now "all indications now point to a strong Republican Congress that will have an adequate vision of its duty and the courage to follow that vision," so we then felt assured that "the Pacific Coast fleet of our vast marine that is to be will afford a great field for a nautical journal and yield to that journal a good support."

The Russo-Japanese war was on, freight rates trans-Pacific were high, much government and commercial freight was traveling to the Philippines, and Pacific Coast shipping men were looking forward to a much more rapid realization of their destiny than actually



The Smith's Cove piers at Seattle, the largest commercial terminal in the United States.



SEATTLE TODAY

The queen city of the Northwest, Seattle occupies a beautiful location on the strip of hills lying between Elliott Bay and Lake Washington. Through the public-spirited action of her own citizens, she has built a canal connecting through Lake Union from the salt water in Puget Sound to fresh water in Lake Washington; so that today Seattle presents possibilities of waterfront on three sides.

The commerce of Seattle is growing very rapidly in many directions. She is the gateway to Alaska; she is the administrative center for a large proportion of the lumber business of the Northwest; she is the center for much of the great commercial fisheries of the Pacific Slope; and her rail connections with Chicago and eastern points offer many advantages for fast shipments of Oriental cargoes to our manufacturing centers. Our illustrations show the Bell Street and the Spokane Street terminals, top and bottom, and in the center 15,000,000 feet of lumber laid out in open storage on the Smith's Cove dock.





transpired. In fact, they were to go through great travail before achieving the wonderful results that are now so apparent.

Twenty-one years embrace much achievement in the development of marine engineering, naval architecture,

harbor facilities, handling machinery, navigating equipment, and devices for communication. The geared turbine drive, the oil-fired high-pressure water-tube boiler, the application of superheat, the turbo-electric drive, the diesel engine, and the diesel-electric drive are all developments of the past twenty-one years so far as practical marine application is concerned. And today we are threatened with the Flettner rotor.

In naval architecture, twenty-one years have witnessed the advance in size of steamers to a peak at a little over 900 feet in length and the falling back to 600-footers for commercial reasons. The submarine and the airship both belong to this period.

Time and space fail us in a review of the almost innumerable useful and now almost indispensable aids to navigation, to comfort, and to safety at sea, which have been developed or perfected during the growth to manhood of *Pacific Marine Review*—wireless, with all its present by-products and its infinite future possibilities; gyro-compass, with its companions the stabilizer and the automatic holmsman; automatic electric generating sets to take the running and accommodation lights in times of emergency; improvements in lifeboats and their handling gear; fire detection, alarm and extinguishing systems; sanitary and ventilation arrangements; evaporators, pumps, refrigerators, elevators, cargo handling devices, and thousands of other machines.

We like to think of all these aspirations, struggles, and achievements as spread forth for the information

TACOMA

In the manufacture of lumber products Tacoma claims first place among the cities of the West. The city is literally surrounded with furniture factories, sash and door mills, handle factories, cooperage works, wooden pipe line plants, and many other evidences of this kind of activity. The docks, erected and maintained by the Tacoma Port Commission, are especially equipped to take care of water shipments of lumber and lumber products. The illustration at the bottom of the page features these Portacomia piers. The upper illustration shows the cranes for handling bulk ore at the Tacoma smelters, while in the center is shown a typical lumber mill on tide water at Tacoma.





PORTLAND TODAY

In the modern Port of Portland, a square-rigger like those shown on page 2 would be a curiosity. For the handling of grain in bulk, of package freight, bunkering, or loading phosphate rock, Portland is equipped as well as any port in the world. The elimination of the Columbia River bar now brings to the Port of Portland the freight steamers of the world, as will be noted in the picture at the bottom of this page, which shows a busy scene at Portland municipal terminal No. 4.

Above, thoroughbred sheep from Oregon farms are being loaded for export to China. At the right grain in bulk is being loaded by gravity chutes into steamers for export to Europe.





Looking down on the Astoria municipal terminals from the hills above the city. Twenty-one years ago there was nothing here but the Columbia River.

cific Coast, which, of course, includes the coastlines of Hawaii, of the Philippines, and of Alaska and therefore constitutes by far the major portion of the seacoast of the United States.

When *Pacific Marine Review* was born, we were then, and are today, able to say without fear of successful contradiction that the territories contiguous to these Pacific coastlines of the United States were without peer in their natural resources and in their adaptability to produce everything that caters to the needs and the wants of our modern civilization. And today this territory is hardly scratched, as far as commercial development is concerned.

Does man want power? Four Pacific Coast States have available 27,000,000 horsepower in their streams—over one-half the available water power in the United States. Alaska has millions more in undeveloped water power, as have also the Philippines and Hawaii. California is the world's premier oil producer, and geologists are telling us of vast fields of coal and oil in Alaska.

Raw materials are here ready at hand and iron ore, timber, raw rubber, raw sugar, hemp, cotton, copper, oils, clays, and a great variety of minerals, including goodly portions of gold and silver.



A busy scene loading freight at a Portland Terminal.



THE GREATEST LUMBER PORT

During the past ten years the cities of Hoquiam and Aberdeen on Grays Harbor, Washington, have rapidly forged to the front as shippers of lumber by water. As we are going to press word comes that the Chambers of Commerce of these two cities are celebrating the shipment of the billionth foot of lumber shipped during 1924. This record places Grays Harbor as first in water shipments of lumber in the United States.

Our illustration shows a busy lumber terminal at Aberdeen. We understand that the hammer-head gantry crane, shown at the right of the picture, is one of the largest of its type in the world.



SAN FRANCISCO TODAY

San Francisco needs no introduction to a marine audience. San Francisco's waterfront is the waterfront of the State of California. Just pile onto that statement the wealth and resources of the State of California and you have some idea of the importance of San Francisco's waterfront.

Food in endless variety and quantity? California alone could support and feed a population of 25,000,000 and not be nearly so crowded as some of our Eastern states. With the same density of population as Massachusetts, California would have 60,000,000 people within her boundaries, and there are states more densely populated than Massachusetts. In fact, the whole of this Pacific Coast region is exporting food by ship and rail to feed the people of every land under the sun.

People are here too in ever increasing numbers. The population of Southern California and of the region immediately surrounding San Francisco is growing at a rate that almost defies the best efforts of municipal government and public utility corporations to adequately keep pace with school, sanitary, communication, transportation, and lighting facilities. Telephone and electric light engineers, making service surveys, have their estimates thrown into discard almost before the ink is dry.

All this remarkable wealth and growth are, of

course, reflected in the increase of shipping companies, the improvement of harbor facilities, and the keen competition for ocean freights. The total volume of cargo handled by water, in and out of the ports of the Pacific Coast during 1924, will exceed thirty-six million long tons. Small wonder that every port on the Pacific Coast is feverishly engaged in preparation for harbor betterments and that the "Eyes of the world are on Pacific ports." We are well aware that our tonnage figures differ widely from those published by the Shipping Board; our figures are compiled from very recent figures submitted by port authorities of the principal Pacific Coast ports and include much contiguous and non-contiguous coastwise tonnage which would not appear in Shipping Board records.

The growth of the Pacific Coast is so phenomenal that it is extremely difficult for statisticians to keep pace with the figures. This is no "Californiac" but a plain statement of an existing condition that is by no means confined to Los Angeles. Witness the frantic scrambling of municipal authorities to maintain adequate school facilities, the constant revision of telephone forecast data, and the pyramiding of public utility bond issues. Cold blooded engineers, forecasting their survey curves ten years into the future, find their expectations realized almost before directors can act on the advice submitted. Note the advance of bank clearings, which during the last fourteen years, in San



THE PORT OF LOS ANGELES

Los Angeles has during the last year achieved the proud distinction of first rank in tonnage in the inter-coastal trade of America, exceeding even New York. She therefore claims to be the fastest growing port in the world. Twenty-one years ago, Los Angeles harbor was not on the map and was unknown as such to the commerce of the world.





CONTRASTS IN PASSENGER ACCOMMODATIONS

In the pictures on this and the facing page we are endeavoring to show the growth in ideas of what constitutes first-class passenger accommodation for the Pacific Coast. Compare the H. F. Alexander above with the Yukon facing. The pictures speak for themselves. The central illustration on this page, showing the first-class dining saloon on the H. F. Alexander, indicates very clearly the elegance and comfort that is required by the Pacific Coast traveling public.

San Francisco alone, have increased twelve hundred per cent.

It is not, however, the actual accomplishment that grips the imagination, but the possibilities—the fact that the surface has only been scratched; that the growth will continue at an increasing rate; and that shipping is to play an ever greater part in that progress.





SAN DIEGO

The most southern port on the Pacific Coast of the United States is San Diego. This city is fortunate in possessing a beautiful land-locked bay, perfectly safe in all weathers. The waterfront is now being improved under the management of a port commission with new up-to-date piers. Two of these are shown in our illustration. San Diego was recently chosen by the United States Navy as site for submarine base on the Pacific Coast.

In the course of this general picture of conditions on the Pacific slope, as we see them, we are purposely refraining from any comparisons between ports or sections. Each port or section has its specialties and its own peculiar advantages which we are glad to display in special articles at appropriate intervals. On this occasion of our twenty-first birthday, we desire rather to felicitate the Pacific Coast as a whole and to attempt to inspire our readers with a larger vision than can be induced by any sectional comparisons. We firmly believe that there is no need for any destructive rivalry between Pacific Coast ports, but that on the other hand there is great need for constructive publicity featuring the whole picture. In this regard we are proud to give more prominent place in our illustrations to all other ports than to our own home port.

San Francisco holds an unique place on the Western Coast. She is, as a New York journalist aptly puts it, "The Western Capitol of Capital" and is rapidly becoming an "administrative center for large business on the Pacific Coast." Test that statement out in your experience and see how true it is. The great majority of the corporations with coastwise organizations have their administrative offices, on that little "bunch of hills" just south the Golden Gate. San Francisco

can therefore well afford to boost every port on the Pacific Coast, knowing that what helps any of them will help San Francisco. And San Francisco is also unique among seaside cities in that she has no port of her own, the whole commercial waterfront being owned, operated, and administered by the State of California.

Getting back to shipping, we have stated that the water-borne tonnage of the Pacific Coast for 1924 amounted in round figures to 36,000,000 tons. A very large proportion of this was oil and oil products, lumber and lumber products. Oil and oil products carried in bulk are very readily and accurately measurable and of the 40,000,000 tons roughly 12,000,000 may be ascribed to this source. Figures in lumber and lumber products are not so easily obtainable, but from the board measure figures available we feel safe in estimating 10,000,000 tons. This allows 14,000,000 tons for steel, machinery, miscellaneous manufactures, and general merchandise, which just about checks up with the detail figures issued by the ports. Never mind about the accuracy of these figures, what counts is that on this Pacific slope there is under the ground and over the ground and in the soil a greater amount of potential cargo placed to better commercial advan-

TANKER PROGRESS

Perhaps in no branch of mercantile marine affairs has progress during the past twenty-one years been so marked as in the application of fuel oil to marine propulsion. Practically the entire art and practice of the carrying of petroleum in bulk by sea has been developed during the lifetime of Pacific Marine Review. Our illustration on this page shows one of the first attempts to produce a tanker. Compare with the picture of Southern Pacific tanker *Tamiahua* on the facing page. The *Tamiahua* is the largest tanker ever built on the Pacific Coast. She was designed and built by the Moore Shipbuilding & Dry Dock Company.



Interior Views Showing Standards of Passenger Accommodations in Inter-coastal Service of the Pacific Mail Steamship Company



The social hall, dining saloon, and a stateroom on the Pacific Mail steamship Colombia. The deck coverings in each instance are Linotile.



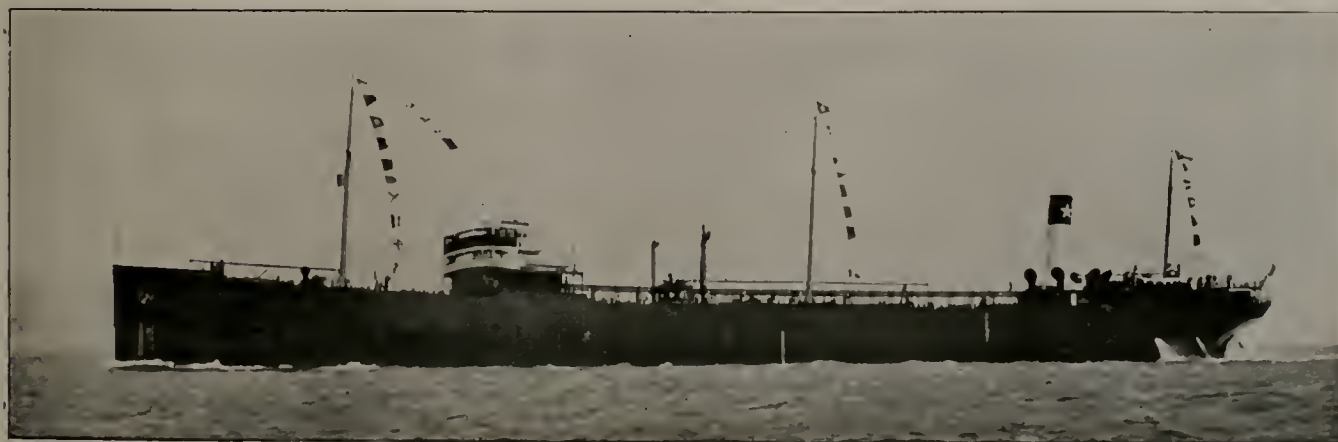
tage than exists on any other portion of the earth's surface. That is the claim we are to make good on in the future immediately before us and for the generations to come.

When we shall celebrate our fortieth anniversary, we shall expect to see twenty million people in the three Pacific states carrying on an immense trade to the Orient, Latin America, Europe, and our own Atlantic seaboard. The Panama Canal will be working continuously in three shifts. Oregon, Washington, and Alaska will be supplying the American world with lumber and lumber products, pulp paper, etc. The Philippines will have become an enlarged Hawaii and will be pouring sugar and tropical fruits, rubber, sisal, and rice into our ports in exchange for machinery, deciduous fruits, and lumber products. The Pacific Ocean will have become the great seat of world trade, and the present younger executives of our great

shipping companies will, we hope, be its great merchant trader princes.

Dealers in San Francisco may be, at that time, able to make sales in Manila, or Shanghai through radio photographic samples or to cross the "big pond" in two days by airship for conference, or hold the conference over long distance wire, watching every play of the other fellow's face as the conversation develops.

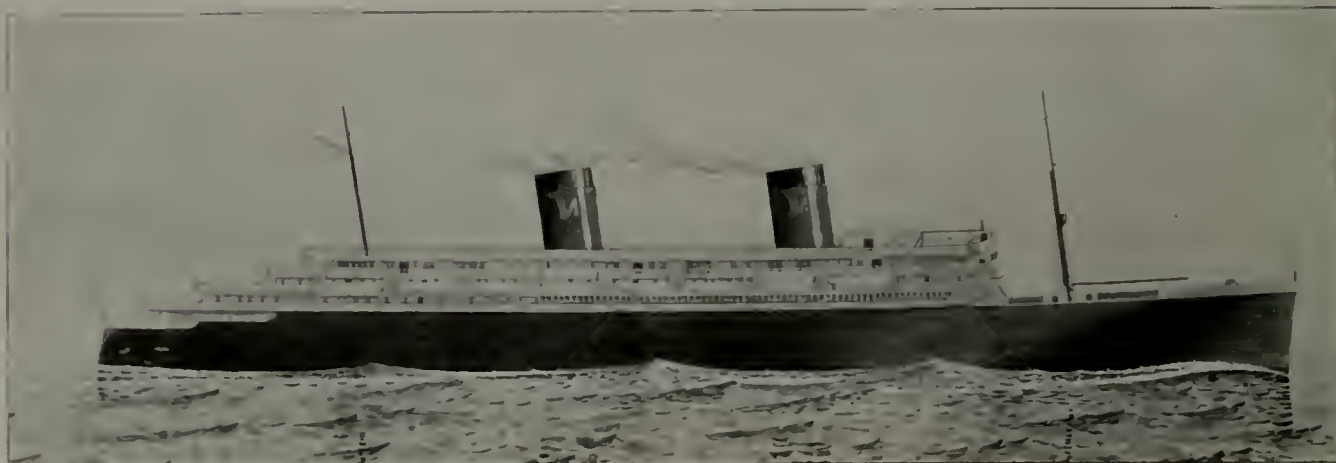
The ports of the Pacific Coast will have been developed beyond the wildest dreams of present-day promoters and in all probability Puget Sound, Columbia River, San Francisco Bay, and Los Angeles Harbor will be well up in front among the busiest waterways of the world's commerce.



TWO IMPORTANT BEACONS OF PACIFIC

THE FLYING FISH (S.S. MALOLO)

Finest Steamer Ever Built in an American Shipyard



Steamer Malolo as she will appear when finished.

Through courtesy of Gibbs Bros., New York.

General Characteristics:

Length over-all	582' 0"	Tumble home at "C" deck	1' 6"
Length on 26-foot water line	577' 0"	Load water line	28' 6"
Beam	83' 0"	Displacement at 28 feet 6 inches	22,050
Depth molded to upper deck "E"	35' 6"	Deadweight at 28 feet 6 inches draft, long tons approximately	8,280
Depth molded to shelter deck "D"	44' 6"	Speed on San Francisco-Hawaii schedule, knots	21
Depth molded to promenade deck "C"	54' 0"	Speed, maximum, knots	23
Depth molded to boat deck "B"	62' 6"	Speed at half power, knots	17
Depth molded to sun deck "A"	71' 0"	Total shaft horsepower, main units	25,000
Depth molded to bridge deck	79' 6"		
Sheer forward	9' 0"		
Sheer aft	2' 0"		

Contract for the construction of the steamer Malolo has been let to the Wm. Cramp & Sons Ship & Engine Building Company, by the American-Hawaiian Steamship Company, with the approval of the United States Shipping Board and under the supervision of Gibbs Brothers, Inc., of New York, naval architects. On her completion she will be purchased by the Matson Navigation Company for their San Francisco-Honolulu run.

OCEAN MERCHANT MARINE PROGRESS

THE CLOUD PIERCER (M.S. AORANGI)

Largest Motorship Afloat



The Motorship Aorangi at Fairfield Shipbuilding and Engineering Company, outfitting wharf, Glasgow, Scotland.

General Characteristics:

Length over-all	600"	Gross tonnage	18,500
Length between perpendiculars	585"	Engines 4, total shaft horsepower.....	13,000
Beam	72"	Sustained sea speed, knots.....	18
Depth	46.5"	Passenger capacity	1,000

The Aorangi, built at Fairfield for the Canadian-Australasian Royal Mail service of the Union Steamship Company, is a first-class passenger liner and a most luxuriously fitted out floating hotel. She will be in San Francisco for inspection late in January. Her propelling equipment is four screws, each driven by a 3250 shaft horsepower Fairfield-Sulzer 2-cycle diesel engine.

EXPERIMENTS IN THE PACIFIC ON THE FAST SAN FRANCISCO RUNS

By WILL LAWSON

EVER since the time, nearly a hundred years ago, when Mitrovitch, a Spanish shipowner, blew up his little steamer Telica at Guayaquil, there has been a good deal of experimenting with steamers on the Pacific.

While other oceans were content to move along with their steamers on regular recognized lines in the Pacific, there seems to have been a restlessness and dissatisfaction and an extraordinary mania for speed over long distances—distances which no one would have attempted to make a race-track in any other of the Seven Seas. In the Pacific, with its leagues and leagues of calm water, the idea of romping along at a rate, which would allow mails from Australia to be landed in London in 29 days, became an obsession.

One of the greatest speed kings and experimenters was and is the Union Steamship of New Zealand. In this, however, the company was merely following the example set it by its American predecessors. It looked so easy. There lay the wide, flat ocean, and the course was almost straight. All that was needed to collect the mail subsidy was to hum across it at top speed—and, there you were! On one occasion the Pacific Mail Company's City of Sydney cracked one of her two cylinders. But that did not stop her. With a tug to start her and another to meet her and stop her at each port, she hooted across the Pacific using only one cylinder, like an old-



The steamer Rotomahana of 1770 gross tons register, 15.93 knots speed, said to be the first vessel of milled steel in the world.

time automobile, and earned the subsidy.

This was the sort of example which met the young and lusty New Zealand company when it took over the contract, in conjunction with the Oceanic Steamship Company, in 1885.

The Union Company began with an experiment in the steamer Mararoa, the first triple expansion steamer to enter the Pacific and one of the pioneers of this type of marine engine. She was a ship of 2598 tons and really the fastest of the Union boats. But the holder of the greyhound was the Rotomahana of 1777 tons, the first steamer in the world

to be built of mill steel. The difference in their speeds was slight, the Mararoa's being, on her trials, 15.8 knots and the Rotomahana's 15.396 knots, so the Rotomahana still retains the greyhound and until recent years her big single propeller, driven by compound engines, sent her through the water at over 15 knots. Now she has retired, after an unbroken career of speed since 1878, as a most successful experiment.

The Mararoa arrived at San Francisco in December, 1885, and in honor of her arrival the marine engineers of the port entertained her engine-room staff and presented the ship with three brass eagles with outspread wings to be screwed to the tops of the vessel's tailrods. The Mararoa did not remain long in the San Francisco service, as her mail room was found to be too small. But she kept the eagles for many years, though the engineers of the Monowai, which succeeded her on the run, tried in all manner of ways to get the American eagles for their ship. In this they had some support in San Francisco, as it was felt that the eagles should be flying in and out of an American port. With the abolition of tailrods, the eagles were scattered, but the big one from the low-pressure cylinder adorns the stairpost of the residence of Captain Post, ex-government captain in New Zealand, and it is a fine big bird. At the time of her being in



Steamer Mararoa of 2598 tons gross register, 15.8 knots speed, said to be the first triple-expansion engine vessel in the Pacific.



Steamer Loongana of 2448 gross tons register, 20.2 knots speed, built in 1904 and said to be the first ocean-going turbine.

the San Francisco service the Mararoa was commanded by the late Captain Edie.

The Monowai and the Moana, which followed the Mararoa in that order, were not experiments. They laid no claim to fame except as sound, fast ships that did their duty. The Union company had a number like them on the regular interstate services of Australasia.

But it was not the Union way to jog along on proved lines. It likes trying new things, and even more than new. With the trans-Pacific run in the back of its mind, it built at Denny's yards the first ocean-going turbine steamer, the Loongana, of 2448 tons, 20 knots. She steamed out to Melbourne in 1904 and was the first of her kind in Australia.

But the Loongana was only the preliminary experiment in turbines. So satisfactory did she prove that in the following year another turbine was launched from Denny's yards for the Union company. She was the Maheno of 5323 tons and her speed on her trials was 17.5 knots. The Maheno was in the San Francisco service after the resumption on the present route and she was the first turbine steamer to cross the Pacific. But sea history and experience with steamers does not go to show that the turbine is the best means of propulsion for long, fast ocean work. One of the ships which helped to prove this to the world was the Maheno, a comfortable and favorite ship still, and employed on the shorter trips of the interstate New Zealand and Australian trade, where her turn of speed is useful.

Undeterred by any suggestion of failure, the company went on experimenting. The next effort to produce a perfect trans-Pacific steamer was made on colossal lines. The result was the Niagara, 13,414 tons. She was built on Clydebank by John Brown & Sons and launched in August, 1912. On her speed trials she made 17.3 knots. Her engines are a combination of reciprocating and low pressure turbine, and complete success has crowned this experimenting. She keeps speed across the Pacific, over a 7000-mile run, as regularly as a railway limited.

Such a vessel, one would think, would have justified the company in building more on the same lines and cease from its experimenting. The Union line did recognize that this would be a wise course. Just

before the war it began to build another Niagara and she was launched during the war, named the Avenger and used as an auxiliary cruiser. But she was sunk. After the war the situation as regards shipping made it unwise to experiment or built for a time. What ships the company had were used in the Pacific runs and did well, till the traffic began to grow.

Now another experiment has been launched. This is the Aorangi of 18,000 tons, with a speed of 18 knots. She will make her bow to California in February. Built by the Fairfield Shipbuilding & Engineering Company of Govan, Scotland, the Aorangi is the largest diesel motor-engine passenger ship afloat, and her speed has been proved at 18 knots, which, while not vastly in excess of that of the Mararoa, is a substantial speed at which to propel so large a motorship on so long a run.

What will be the next venture of the Union company in its shipbuilding program? Who knows? Since it started in New Zealand fifty years ago, with three tiny steamers, it has scarcely ever had more than two ships alike. Almost every new one has been an adventure into unknown dimensions in shipping experience and practice. Perhaps that is why there are so many wiseacres among land-lubbers, down there, who can tell the Tahiti from the Maunganui, the Moeraki from the Manuka, and so on, when the ships are just lifting over the horizon. Each ship has character; there has been no standardization; and however this practice may be viewed by cautious folks, it must be conceded that the Union Line has been somewhat of a pathfinder in its experiments.



Steamer Maheno of 5323 tons gross register, 17.5 knots, built in 1905, and said to be the first trans-Pacific turbine.



The S. S. Niagara, 12,414 tons gross, 17.3 knots speed. The first combination reciprocating and turbine engines on Pacific Ocean.

The outstanding feature of its operations has always been a remarkable solidity of construction. It is

this which has enabled the Mararoa, now running a ferry service in New Zealand, to be converted into

an oil-burner, though 40 years old. Her hull and her columns, standards, bearings and other engine-room equipment were remarkably strong and heavy. This was commented on by the engineers of the Sonoma in the year 1900, when their mail boat had raced the Mararoa across the Tasman, from Auckland to Sydney, and they went round to look at her, to discover how she had managed to put up so game a fight.

When they saw her engines they exclaimed: "My God! What a waste of metal!"

That is what it looks like when you first see it. But it was that metal that enabled this first trans-Pacific experiment to stand up to the years of heavy service she has had.

A UNIQUE PACIFIC COAST-ORIENTAL TRADE



Center: Raw silk as shipped from Japan to Pacific Coast ports. Left and Right: Toyo Kisen Kaisha steamship Shinyo Maru unloading bales directly into fast express trains.

ONE of the most valuable Oriental cargoes that come into the ports of the Pacific is raw silk from Japan and China. The average cargo of this commodity, as carried in the big fast Pacific liners, is valued around three million dollars. Raw silk comes in hanks, which are carefully tied up in bundles, and these bundles are assembled in bales protected by heavy matting carefully secured against possible rough handling. Each bale is worth approximately \$1000 at the present time.

From San Francisco and Seattle the silk is transshipped by rail to New York, where it is put through the various processes of dyeing and weaving to make up the shimmering fabrics of fashion.

In handling a cargo of such high value and such small bulk speed is essential to offset high insurance

and interest rates. When, therefore, a liner is coming into port with raw silk she is met at quarantine by stevedores, who break out hatches and get tackle all set for prompt discharge. At the dock special express cars receive the silk immediately from the ship, and these cars are given special right-of-way through to New York on fast passenger trains, often making the trip through in less than 90 hours.

Our photographs, taken recently at San Francisco, show the Toyo Kisen Kaisha steamer Shinyo Maru discharging bales of silk directly into express cars. Silk shippers always choose the best possible schedule and steamship companies are always proud to be chosen for this service. Admiral-Oriental Line, the Pacific Mail, the Toyo Kisen Kaisha, and the Canadian Pacific all qualify.

ECONOMIC LIMITATIONS OF INTERCOASTAL REFRIGERATIVE SHIPMENTS

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SINCE 1920 the attention of transportation interests has been called to a new form of continental railway competition—fruit and vegetable shipments by refrigerative facilities from the Pacific Coast to the Atlantic Coast, such shipments including the possibility of rail shipment at both ends. Most of the discussion so far has centered on the ship and refrigerative problems, but more recently the economic phases of such competition have come to the fore. Technical aspects of proper refrigeration, storage, and stowage are important, but there may be fundamental economic competitive limitations to this traffic which deserve examination.

First, let us look into the causes for the rise of the competitive type of shipment, and see if there are any problems which stood a fair chance of being solved. Undoubtedly, railway rates in their rise since 1920 have served as a prime cause for diversion from the railway to the ship. Such rates have been highly important in the marketing of California citrus fruits, and reductions by the carriers which seem to be promised in recent cases, would help to solve this important question. Another undoubted cause for the diversion to the ship from the railway has been the inadequate car supply offered by the railway for the movement of perishable food stuffs, particularly fruit and vegetables. An instance of this is the serious shortage of cars in the Northwest in 1922, when there were less than 15 per cent of the required number of box-cars and 40 per cent of the refrigerator cars necessary to move the apple crop. This led to a heavy movement of apples to the Atlantic by water through the Panama Canal. Previous to this, there had been a rapid increase since 1920 of shipment by water from Seattle and Portland, due, primarily, to the same cause. In part, the same general situation held true for California.

No Car Shortage

But what of car shortage this year? In the first place, the crops have not been up to normal, and therefore, if other things were equal; that is, if the rate situation were remedied, the steamship lines would have little tonnage to sustain their connections and services. In the second place, the rail carriers' program, both as to individual roads and as to the reinforced rules of the Car Service Division of the American Railway Association, shows there is no car shortage of any proportion this year. There has been a considerable enlargement of the refrigerator car fleet in the continental lines, although most of the increase has been in the privately owned lines, and in studying the bulletins and statistics of the actual car loading, and supplies of cars, and the program of the above mentioned Car Service Division, one can not help seeing the immense improvement made and which can be made in adequate service on this score. The United States crop and market report for September 20, 1924, reads: "No transportation difficulties are looked for this year. The supply of cars in sight seems sufficient to take care of the heavy movement expected during September and October. Cold storage facilities have been increased slightly, and track and range storage will be able to take care of a little more than two-

thirds of the crop." Therefore, if rates promise readjustment and car supply is not an unsurmountable obstacle, these two factors will to a large degree determine the future of refrigerator shipment by water.

Now, as to the advantages which the railway may possess in an all-rail haul from the Coast to markets in the East, most assuredly they must and will continue to play a great part in laying down the economic limitations of refrigerator shipment by water. Particularly does this hold true for the bulk of such shipments as fresh fruits. The very nature of the commodities to be disposed of demands markets which will not spoil, standard grades and costs, and the best available prices. These will be served by the following railway advantages: diversion privileges, large rate parity zones for assembling, inspection, through rates, speed, better market locations, better insurance, and government rail regulation.

Diversion Privilege

Outstanding among the advantages is that of diversion in transit. Although this privilege is abused to a large extent, it is but an evidence of an advantage which shippers are eager to take hold of, an advantage not enjoyed by ships and less by shiploads of fruits and vegetables, which might not be able even to afford diversion from one port to another and stand the whole port costs. The gateways for diversion for ships would be limited, whether for part shipment or shiploads, to the coast points at the end of the trip, instead of at the strategic gateways, for instance the gateways to the eastern markets as at Kansas City, St. Louis, and Omaha, an advantage not possessed by water shipments.

The services built up by the Federal Government and other agencies in connection with the diversion privileges enjoyed by rail shipments are complete. The federal and state market news service, the representatives of shipping agencies, and so forth, meet each day to distribute all unsold cars due for diversion at several of these gateways. In fact, for some fruit shipments plans have been formulated by which shipments to each market have been determined in proportion to distributing power and the daily movement. So that it has been possible to regulate receipts in large terminals as well as to utilize smaller market outlets.

As an example of the service performed by the rail and other agencies take the canteloupe shipments from the Imperial Valley, California. Shipments may be destined to points five to twelve days distant and are expected to arrive at any one of these points in just the right condition of maturity. Therefore, the forwarding cars are necessarily regulated very closely. Three hundred and fifty cities in the United States, including many smaller cities in the Middle West and East are supplied, and this distribution helps to maintain levels of canteloupe prices as well as the levels found at the leading terminal markets.

On the other hand, if more than 50 per cent of the fruit crop of the Coast is sold on the Atlantic Coast zone, it is after the markets have been protected as to prices and the privileges of diversion have not been exercised on the way to the Atlantic Coast. Hence, it

seems the limitation is the Atlantic Coast zone for water shipment. Little could be expected to move inland to compete with the gateway markets and rail privileges of the all-rail fruit across continent. Hence, it is necessary to take up in order the other advantages of rail shipments and see if they apply to this zone, a zone which comes at the end of the water haul.

Rate Arrangements

What about rate arrangements? First, as to competitive zones for collection and assembling of traffic. It is a practice of the rails to include in a wide area competitive districts and place them on a parity as to through rates, although some may be nearer than others in the commencement of transeontinental shipment. For purposes of competing on a wide area with the railways, a through rate involving a rail haul before the water haul would have to adopt the same principles of the railways. Then, secondly, as to through rates, quotations of through rates by the railways include all the services although divided up into two separate parts, first the quotation of the railway charge, second, in a separate tariff, the quotation of the refrigerator charge. Coordination of the various agencies performing the rail haul-water haul-rail haul to reach Atlantic inland points, would be necessary in order to quote through competitive rates.

Furthermore, in the services given for the published rates and in the level and regularity of rates by all-rail shipment there is the Interstate Commerce Commission to protect the public and shippers' interests. The jurisdiction of the Interstate Commerce Commission does not extend to port business, but if through rates were established for shipments from rail connections then by water then rail again, to compete with the all-rail haul, the Interstate Commerce Commission would have power to regulate under the phrase of the Interstate Commerce Commission signifying that such shipments are under common arrangements, control and management. Not until such arrangements were made for the quotation of through rates could such types of shipment really obtain the advantages of government interstate regulation. It would be noted here that there may be serious conflicts in the policy and regulating principles of the United States Shipping Board and the Interstate Commerce Commission, conflicts which have been, and are still, the subject of discussion among students of transportation.

Markets

Are the market locations any better than on the shipments partly by rail, partly by water? The rail markets en route to the Atlantic seem to be better located and operated than the markets along the Atlantic Coast points. For instance, 90 per cent of the fruit and vegetables at Pittsburg are sold directly from the cars in two largest railway yards. Practice has given this market the name of "market on wheels." There are bargainings direct. A truck drives up to the cars and loads directly from the car. Fruit and vegetables in excess are diverted to better markets at Pittsburgh and Kansas City. St. Louis has its principal produce yard on the Wabash tracks. Rapid truck and economic loading is facilitated by the wide doors on the opposite side from the car tracks. This seems to be characteristic of many of the gateways for rail shipments. Shippers are not likely to pass up some good marketing locations, such as are illustrated in

these and other important railway points, where diversion may be exercised.

Take a brief examination of the Atlantic Coast zone points. We find generally that there is not the co-ordination between the rail and the ship terminals for the disposal of fruit and vegetables. Boston handles all produce from cars, but her system is not as economical as in a city where large produce terminals are located directly in the rail yards. The loss of time and the congestion in the streets while haggling goes on are economic wastes in addition to the waste of the long haul from the rail yards to the Boston market. New York and Philadelphia are more favorably situated than Boston, for the rail yards co-ordinate to some extent with the terminal sheds and piers where the produce is unloaded. Philadelphia, for instance, has its market house, potato yard, and fruit auction; although a few cars of citrus fruits are disposed of at private sale at the market house, the great bulk of western oranges, lemons, and grape fruit is handled at the fruit auction. The markets of Philadelphia are located at the two largest railway piers of the Delaware River. Baltimore, although having the advantage of being at the head of the Chesapeake Bay, has the advantage of the custom of taking the fruit to various Delaware warehouse men, repacking, and shipping fruit to eastern and northern markets. Most of its produce yards are off the water front, in the vicinity of Sharp, Lee, and Conway streets, or in the job districts of Pratt, Light, Camden, and Charles streets.

Thus the custom and practices of several of the important Atlantic Coast points do not coordinate to the best degree with rail and water shipments, nor do they give the same privileges and protections to market as enjoyed by the all-rail shipments at gateways en route to these points. It is of interest to note that this lack of coordination by the rail and water shipments is found to a large degree to be a result of age and custom. In the organization of Pacific ports and the new Gulf ports there are splendid contrasts to the inefficiency and congestion of the older Atlantic ports in this respect.

It should be noted in addition that recent decisions of the Interstate Commerce Commission prove still further the serious difficulties of operating on the Atlantic Coast points for the most economic and convenient handling of the fruit and vegetable traffic. To remedy this condition the expenditure of individual and public capital in the obtaining of market and terminal sites might be too expensive to be warranted in view of the astounding prices for water front land.

Inspection

It has often been said that railway shipments possess another advantage—that of inspection. The inspection service from the Federal Government, started in 1917, has been more or less improved at points of shipment as a form of insurance on the cost of the goods. Recently it has been noted that the federal inspection service has not been adequate at the ports of New York and Philadelphia on account of congestion.

We greatly desire to see refrigerative intercoastal shipping business firmly established but we feel that the problem is one of economics rather than of marine engineering or naval architecture, and so we throw out these suggestions as to the economic problems involved in order that they may stimulate discussion and solution along sound business lines.

SHIPPING PROBLEMS OF THE PACIFIC

A CONFERENCE ON AMERICAN SHIPPING PROBLEMS AS THEY AFFECT THE SHIPOWNERS AND SHIP OPERATORS OF THE PACIFIC COAST

Held at the Midyear Meeting of the Western Division
of the Chamber of Commerce of U. S. A. at Los Angeles, California,
December 3, 1924



Getting their heads together

SHIPPING PROBLEMS OF THE PACIFIC COAST

An Analysis of Conditions Facing American Ship Owners and Ship Operators on the World's Greatest Ocean

By J. E. CUSHING

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IT is hard to localize our shipping problem. The factors which will make or break a merchant marine are confined to no one of the oceans. They exist on all. You cannot consider what is happening on the Pacific and draw any sound conclusions from it without taking into the reckoning all the angles of our confused and confusing maritime situation. It follows that the scope of this discussion must be wider than its announced subject. Our shipping problem, however, is of peculiar interest to the Pacific Coast. Probably no one of us doubts for a moment that the great trade development of the future will be most manifest on the ocean which fronts us. If we are ever to have an American merchant marine, its interests and its very life will be centered on the Pacific trades.

This is no theory picked from the air. We are fond of recalling the days when we were a seafaring people. From the very beginning of our merchant marine, and throughout its brief but splendid career, the Pacific Ocean played an unforgettable part. If there is anything in the old axiom, and history does repeat itself to the extent of sending us down to our ships again, it will certainly repeat itself by using the Pacific as its stage. If we are to guess intelligently at what the future holds, it is important to remember all this and to briefly recall the background which a century and a half has built for us.

Necessity Mother of Seafaring

Necessity drove New England to the sea in the early days of the republic. Good profits and the need of finding new trades away from the war-torn Atlantic of the French Revolution, sent her ships westward. The *Empress of China*, arriving in Macao August of 1784, led the way for the fine fleet which pioneered the old Canton trade. We were not a manufacturing nation in those days, and specie, the only other medium of exchange, was scarce. There was ginseng, but only a limited Chinese demand for it. Great Britain, with her factories behind her, had every competitive advantage. It was the northwest fur trade which solved that problem for the merchants of Massachusetts and New York. Out with Indian trade goods to Oregon or Vancouver Island, via Cape Horn, thence with the bartered furs to Canton, and from Canton around Good Hope with the tea and silks that the furs had bought—that was the voyage, upward of forty thousand miles and three years from home.

When Mexico freed herself from Spain, another Pacific trade opened up. California for hides became a common clearance in our Atlantic custom houses. It was a long, hard voyage out and back by the Horn, with its heart-breaking accompaniment of beating back and forth along the California coast immortalized by Dana, but it brought our first ships to the Pacific Coast. Then came the gold rush and, with it, the golden age of our merchant marine. Speed was wanted, speed meant money, and speed was supplied. There was hardly one of our famous clippers that did not see the Golden Gate on her maiden voyage, or early in her career. From San Francisco they found their

way home via the China tea ports, taking the cream of that trade by sheer superiority of service, against the competition of the merchant fleets of Europe.

Steam Comes to Pacific

With the gold rush, too, steam came to the Pacific. Most of us think of Cunard, P. & O., and the other old-time British companies as the pioneers of off-shore service in steam. Cunard was founded in 1840, the P. & O. three years earlier. They did not antedate by many years the Pacific Mail—an American company in a Pacific trade—with its record of continuous service since 1848. Established first for the coast to coast run, the Pacific Mail ventured further, and with its Oriental service brought into being the trans-Pacific trade that we know today.

With the opening of the great Middle West America turned her back on the sea. There were contributing causes to the decay of our merchant marine. The introduction of iron and steam and the Civil War had their effect. We would surely have overcome these handicaps. We could not overcome the cold facts of more money and an easier life ashore. You need go no further to understand why our flag disappeared from the ocean.

Pacific Saves American Marine

In those dark days, the only spark of life in the long voyage trades was on the Pacific. The coast-to-coast route by sail around the Horn, by steam across Panama, accounted for most of our ocean-going vessels of any size. Coal and merchandise brought ships out. Wheat had succeeded gold in California, logging was beginning in the Northwest, and grain, lumber, or Hawaiian sugar took them back again. The Pacific Mail maintained its place in the trans-Pacific run in the face of growing foreign competition, and incidentally furnished our first sad object lesson in the workings of a subsidy. A little later came the Alaskan fisheries and, with the Postal Aid Law of 1891, the Oceanic Steamship Company commenced its operations to Australia. The record was scanty enough, but without the Pacific trades there would have been no record at all. The last remnant of our merchant marine would have sunk without a trace.

The annexation of Hawaii and the Spanish War were of supreme importance to the commerce of the Pacific Coast. To some small extent they brought our people to think again beyond our own borders and turned our eyes once more westward. Above all, they set in motion the forces which ultimately led to the building of the Panama Canal. Even so, they did not shake us out of our indifference to maritime ventures, and when Roosevelt sent the fleet around the world in 1908, chartered foreign vessels carried its fuel supply.

Annexation brought Hawaii under our protective coastwise laws and her sugar supplied the basic home-ward cargo for coast-to-coast steamer service. The American-Hawaiian Steamship Company commenced its operations in 1900, and shortly after that Matson entered the field in the direct trade between the coast and the Islands. During these years, too, the coast-

wise trade had been steadily developing with the growth of lumber production in the Northwest and the rush of population to California.

What War Brought

Then came 1914, the opening of the Canal, "ships, ships and more ships," and all that hurry of events which put us where we are today, without our knowing just how or why. The Canal itself—probably the most important event in Pacific Coast history—was lost in the shuffle or more pressing matters and has only come into its own during the past four years. We have hardly begun to take account of the changes it has made.

So, from the infancy of the United States, the Pacific has influenced our maritime history. It has played its part in the beginnings, the zenith and the decline of the American merchant marine. It will play an ever greater part in its restoration. So, too, we come to consider the present situation on the Pacific and the present status of the American merchant fleet.

Present Condition

At the outset we must recognize the dual phase of the situation. On the one hand the private owner, on the other the United States, operating through the Shipping Board and its managers. On the Pacific, private ownership has maintained itself more effectively than on the Atlantic and, generally speaking, the position of the American flag is stronger against foreign competition than in any other ocean. Without invoking any mass of detailed statistics, it is interesting to glance rapidly over the leading trades.

Off shore, privately-owned American flag services are operating trans-Pacific, to the West Coast of Mexico, Central and South America, to Australia and to Europe against the keenest kind of foreign competition in every trade. To a certain extent the government parallels these private services with its passenger and freight lines to the Orient and a freight line to Australia. All of the protected trades, Hawaii, Alaska, intercoastal and coastwise, are, for the time being at least, left to private operation. In all but the local coastwise trade the protected voyages are of a length to require a type of vessel suitable for real off-shore trading. Coast-to-coast the usual round voyage, via Panama, logs upwards of 12,000 miles.

On the coast itself our passenger steamers and services will compare favorably in type, speed, and size with any similar trade, and even in the more prosaic business of freighting lumber and oil, the tendency is to a larger type of carrier. If every other American flag steamer were wiped out, our coasting fleet could furnish the nucleus for a small but efficient merchant marine in almost every class.

Foreign Competition

Taking a rough measure of our foreign competition, we find the Oriental passenger trade served by three Japanese, one British, and three American lines—two of which are government-owned. The freight lines are harder to gauge on account of the element of tramp competition, but we can identify one private and three government lines under the American flag against three Japanese, one Canadian and one British line, all operating on more or less defined schedules. In most of the other trades, the proportions are about the same and our record in the Pacific, from the standpoint of line services, is far from a disgraceful one.

In the tramp trades, grain and lumber, we do not figure. Both to Europe and the Orient, Japan and England, with a sprinkling of the three Scandinavian flags,

have things their own way. In the other great bulk trade, petroleum products, we do play a prominent part, principally under private auspices, and thus far the most of this tonnage has been carried in American bottoms.

Our Problem

In some part our present situation was the result of war conditions; for the most part it has not had the acid test of time. The next few years will tell whether we are going upward from a good start, or whether we will fall behind and gradually disappear. We cannot stand still. Our opportunity is before us, but it is only the opportunity to find the proper solution to a difficult problem. Until that big problem and its attendant brood of little problems are behind us, our future on the Pacific, or any other ocean, is far from secure. It is not a hard problem to state, but it takes three questions to state it:

Do we need an American merchant marine?

Do we want one?

How can we have one against the handicaps—natural and artificial—under which we labor?

In considering the first two questions, we must recognize two entirely different factors and answer them separately. There is an economic and a national aspect. Unfortunately, they are often confused, and from their confusion has come much of the bunkum with which discussions of our maritime problem are usually bedecked. The economic factor is a straight matter of business. The national factor is practically a matter of defense, with a good admixture of sentiment. To get at the answer to our last question, we must first dispose of "need" and "want," looked at from those two angles.

Economic Need

Economically, "need" is easy. If we really needed a merchant marine, we would have had one long ago. When we need one, we will get it, and hampering legislation, higher operating costs, and all our present-day bugaboos will be straws in the flood. It was sail or starve with old New England. She built ships and she sailed them. It has been sail or starve with Old England, with Norway, Sweden, and Denmark, these many years past, and Western civilization is forcing the the same grim choice on Japan. Our greatest handicap in competition with other maritime nations is their virtue of necessity. No artificial creation can take its place.

Along with the handicap imposed by the total lack of any compelling force to drive us to the sea, runs its team-mate, a complete public indifference. Outside of a relatively small number of people on the fringe of the country, the great mass of Americans do not care enough about our problem on the ocean to give it a moment's thought. There are perfunctory resolutions by commercial bodies, some little flareups when the flag is waved, and occasional conversational attempts at a polite discussion; but beyond that there is nothing but dead, apathetic indifference. Nor is there good reason to expect anything else.

This is a broad statement, but it is not hard to illustrate it. Suppose that every handicap to profitable operation of ships under our flag was swept away and that we stood four-square with our strongest competitor. Suppose that a well-managed, properly financed, conservative American shipping enterprise goes to the country at large—to the investing public—for funds, against a similarly strong home industry calculated to yield about the same return. There is not enough

money to take care of both. Which one will get the preference? The question answers itself.

Economic Want

With economic "want," the case is somewhat different. There are two main commodities in world trade—raw materials and manufactured articles. Though probably subject to countless exceptions, there is one persistent distinction between them. Raw materials sell themselves. The buyer needs them and will come to the seller to get them. Manufactured articles must be sold. The seller must seek his market, create a demand, and usually take his wares to the buyer. He may use his own delivery wagon, or he may hire some other fellow's. When that other fellow happens to be his selling competitor, it is not such good business.

Great Britain is the greatest maritime nation. In large measure her necessity makes her so; but Great Britain is also a buyer of raw materials and a seller of manufactured articles in the world's markets. With her, "need" and "want" go hand in hand. Germany was not forced to the sea by any necessity. She never built a great tramp fleet, nor did she play any prominent part in the world's carrying trade, where her own national interest was concerned. Yet Germany, before the war, was fast becoming a maritime power, with liner services on every important route. She bought raw materials, she exported her manufactures, and she did not consider it good business to use British delivery wagons. With her it was a case of "want" and not "need."

Slowly, but surely, we are ceasing to be an exporter of raw materials and becoming an exporter of manufactures. The transition is on us now. It will probably be long drawn out, and for years to come we may be indifferent to the color and make of our delivery wagons. Some day the "want" will manifest itself, and that day will see a long step forward toward the firm establishment of an American merchant marine.

Already there is a drift that way. In the off-shore trades, most of the privately-owned American-flag tonnage today is what might be called industrial tonnage. Our greatest manufacturing exporter—the Steel Corporation—is carrying its cargoes in its own vessels on numerous trade routes. The oil companies, the banana companies, and one or two of the larger exporting commission houses, are following the same policy. It is a small start, but it may be the beginning of a real one. These signs are encouraging, but they hardly justify our saying that economically any present "want" exists.

National Need and Want

When we turn to the national angle, it is hard to distinguish between "need" and "want." With our long coastlines on two oceans and the Gulf, with the Panama Canal, Alaska, and our insular territories, common sense dictates that we have a navy fully commensurate to our needs. The "limitation" treaties make it increasingly important that our merchant marine be capable of supplementing our naval establishment by providing fast liners suitable for conversion in time of war. Our present lack of this type of vessel is real and serious. We "need" them, and we can have them if we will be frank enough to tell ourselves what we want them for instead of sticking our heads in a sand of platitudes about "balanced fleets," "new trade routes" and "our flag on the seven seas."

Apart from the question of defense, we should feel the "want" for ships of this type, even in times of peace. It is neither good policy nor good business

to be too dependent on our competitors in as important a matter as the carriage of our mails. How many ships and what type and kind, the naval experts can tell and the problem should be dealt with primarily from the naval rather than the commercial standpoint. But, unless we are ready to turn irrevocably to government ownership and abandon the individual initiative that has made us great, these ships should come into being and remain in time of peace as the creations and tools of private enterprise. Of this, more later.

Naval Adjuncts

We hear a great deal of the necessity for cargo steamers as adjuncts to the Navy, and we have had a tremendous example of the part which the cargo steamer plays in a great maritime war. Neutrals and belligerents alike learned that lesson in 1914. It is one of the strong arguments for the continuance of government operation. When we analyze our present "needs" in this particular, we get some rather surprising results. Few people realize the magnitude of our protected coastwise fleet. It lacks in fast passenger steamers capable of long off-shore voyages, but it embraces almost every type of cargo vessel, among them some of the finest freighters afloat. In numbers and tonnage it makes a respectable showing and under the stimulus of high transportation costs by land, it gives promise of steady growth. For any disturbance, short of another world war, it would come close to filling our needs.

It may surprise some of you to hear that in the last Canal year almost three thousand American-flag steamers transited Panama. It may surprise you even more to know that Great Britain, the leading foreign user of the Canal, put through less than half that number of vessels—thirteen hundred in round figures. There is no appreciable small-ship operation on any Canal route. All of the trades via Panama are long-voyage trades and the steamers employed are of a type to run anywhere. Moreover, government operation on the Panama routes is insignificant, and while the exact figures are not available, it is safe to guess that the great bulk of our merchant shipping using the Canal is privately owned. Incidentally, these figures again bear out the prominent part which the Pacific is playing in our maritime affairs.

On the sentimental side of our "wants" there is not much to be said. It is soothing to our national pride to recall the clipper ship days and to picture ourselves again a dominant factor in the world's trades. But sentiment does not build ships or finance them or fill them with freight. Advertising-mad as we sometimes seem to be, it is hardly reasonable to let our mania carry us that far.

How to Have a Merchant Marine

Economically, we have no present "need" for ships. It will be a long, long time before that comes. Nationally, we "need" and "want" a limited number of a definite type. The sooner we get them the better. Economically, there is a potential "want" and its development to actuality is probably at hand. But "wanting" is not "getting" and we cannot translate our wants into ships until we have answered the last of our three questions—"How can we have a merchant marine against the handicaps—natural and artificial—under which we labor?" Lack of compelling necessity is a limiting rather than a fatal handicap. Selfish interest is a sure cure for apathy. Heavy as this burden is, it can be overcome in time; but it is not so

PART OF A FINE FLEET OF FREIGHT CARRIERS WHOSE HOME PORT IS SAN FRANCISCO



American-Hawaiian Steamship Company freighters steamship Iowan, motorship Missourian, steamship Mexican, steamship Texan, steamship Ohican, and steamship Pennsylvanian

easy to reconcile a protectionist standard of living in an almost self-sustaining nation with successful competition on the free trade routes of the world.

Operation Expense

Measured in money, there are a number of different factors which go to make the expense of running a ship. You have first to build or buy her, and on her cost or value must be reckoned the capital charges—interest, insurance, depreciation. You have then to upkeep, man, victual, and bunker her; find, load and discharge her cargoes and pay her pilotages, port charges, and Canal tolls. Obviously, since there are two ends to every voyage, certain of these charges are the same for all flags. Cargoes in all the great trades are handled by shore labor and not with the ship's crew. Despite occasional frantic spasms in Washington, there is no serious flag discrimination in port charges anywhere. On a voyage from the Pacific Coast to Shanghai an American ship will be at no disadvantage to a foreigner in the handling of cargo, her port charges, her fuel and her supplies, since both buy in the same markets. She will pay the same rate for her insurance, but on a higher value. On management cost or overhead there will be little to choose. So that our handicap is confined to the capital charges of depreciation, interest and insurance—which spring from the capital cost, and the two operating items of manning and repairs, with some slight difference in victualing for good measure.

Steamers, cargoes, trades, and voyages are so materially different that it is impossible to translate these handicaps into a measure of money except by the roughest kind of a rule of thumb. Inaccurate as it must be, it is interesting to try it in order to get a crude idea of just what our much-discussed operating disadvantages mean.

Details of Voyage Expense

Out of every hundred dollars spent on an ordinary cargo voyage, thirty-five will go for fixed charges, wages, feeding and repairs, and sixty-five for fuel, port charges, agencies, and handling of cargo. On the first or competitive item, British wage costs are about thirty-five per cent under ours. The fixed charge element is harder to figure, but on a newly constructed steamer there is probably thirty per cent against us. In other words, where we spend one hundred dollars, our competitor's outlay is about eighty-five. With the Japanese the comparison is worse. At the highest, their wages are less than half of the American scale. On a low freight market—and in times of peace its chronic state is low or lower—we must work under a heavy handicap.

Unfortunately, this handicap, severe as it is on cargo carriers, is even worse on passenger liners where, relatively, first costs and wages are greatly increased. So that, competitively speaking, we are up against our hardest problem on the class of vessel which we need the most.

American Executive Ability

We must reckon with our real handicaps, but it is not necessary to create artificial ones. There is a tendency among our own people to decry American ability to manage and operate steamers. It would be shameful to admit that American brains cannot compete—given something approaching an even break—with the brains of any other nation. It is not necessary to admit it. While the shipping field is naturally limited compared to other enterprises in the United States, its quality is high and there is no American shipping man of any standing who will not undertake to back him-

self and his organization to the limit against the best that England or Japan can produce. The old seafaring towns of Maine are still turning out as fine a type of men as ever officered a ship and our engine-room personnel need fear no comparisons. When it comes to running what ships we have, afloat or ashore, we are at least on even terms with England, and she would be the first to recognize it.

There are other handicaps in the way of foolish and restrictive legislation. They hamper more than hurt. Each adds its bit to our disabilities and we could well do without them, but they do not make or break us. If our major handicap—higher costs—was overcome, our minor troubles would not last long.

We are a protectionist nation. Our industrial system, our standard of wages and consequently of living—in fact, our entire national life—has been built up on the foundation of protection. Almost self-sustaining, with tremendous natural resources, and so situated as to be practically immune from foreign invasion or attack, we have achieved results from protection that no other nation has approached. But protection afloat is not so easy. On the ocean we must go up against the open competition of the world, and it is worth repeating that open competition and protectionist standards of wages and living are not easily reconciled. If we want an American merchant marine, that reconciliation is the key to getting it.

Solutions Offered

Numerous solutions are being offered. As usual, the natural one is the simplest and best; but, equally as usual, it is the least likely to be chosen. If the American shipowner could build or buy his tonnage wherever he chose, if he could seek his labor in the cheapest market and operate on anything approaching a parity with his leading, if not his most favored competitor, there would be no problem and we would have an American merchant marine as fast, or probably faster, than we wanted it. That course involves throwing the American shipbuilder overboard—except possibly for the demands of the protected coastwise trade. It might and probably would mean Oriental standards of living under the American flag. It would supply the answer, but there is good reason to doubt its adoption.

In this connection, signs are not wanting that the costs of our leading competitors are slowly rising. This is particularly true of Great Britain. But equalization by this method is a matter of many years, and as long as necessity drives other nations to the sea, it may never come. Moreover, there is no reason to believe that our costs will stand still, as those of our competitors rise.

Protection on Ocean

In one direction, and one only, we have applied the protectionist system to our business on the ocean and made it work. From the beginnings of the republic our coastwise trade has been limited to vessels of our own flag. We have seen that this has given us the nucleus of a merchant marine. No other nation has done it so successfully because no other nation has a coastline like ours; but if the British Empire ever turns protectionist, it can maintain a large measure of Great Britain's pre-eminence in maritime affairs by closing the inter-imperial trade to the ships of other nations.

If we demand protection for our shipbuilders and for American standards afloat, we must maintain our present coastwise laws, or see our flag disappear from the seas overnight. Anything that stunts the growth

of our coastwise fleet strikes hard at the future of our merchant marine. Anything that fosters its growth helps us. The extension of the coastwise laws to the Philippines would immeasurably strengthen our position on the Pacific, and no one with the interests of our merchant marine at heart could oppose it. But we have to reckon with the feelings of a proud and sensitive people and our decision cannot be made until we settle for all time our status in that archipelago.

Subsidy

There are other suggested solutions. For the past five years we have been dallying with one of them. The war gave us a fleet of merchant ships and, having the bear by the tail, we have been struggling to decide whether we let go or hang on. The issues involved in that decision go further than the mere problem of an American merchant marine. They claim special consideration and can be passed while we review the other answers to the problem, all of which can be grouped under the general heading of protectionist solutions.

Foremost of these is subsidy. For value received and to fill a real national want, subsidy, in the shape of mail contracts, is the answer to our need for fast passenger steamers. We have only to modernize the Postal Aid Law of 1891 and to state frankly that what we are after is a naval auxiliary, to do the trick. When we talk subsidy on this basis, it is a reasonable application of protection to fill a real national want, without, on the one hand, taxing the many in the interest of the few, and, on the other hand, embarking on an irrevocable policy of government ownership.

Aside from this special purpose, the case for subsidy is not so clear. Even assuming that we want a great cargo fleet in the foreign trade, and that protection alone will give it to us, our protection ashore has always been indirectly applied. When it comes to direct payments for very intangible returns, the American people have never been overeager, and history says that their gifts through Congress have usually had a strong Indian flavor. There is today no real basis for any such assumption. Something for nothing is bad business for the taker as well as the giver, and a merchant marine built up on that sandy foundation is not likely to prove a permanent or satisfactory structure.

Indirect Subsidies

The indirect protectionist solutions—differential rail rates, discriminating port charges and preferential duties—all have one fatal weakness. They overlook the very important fact that there are two ends to every voyage and that ships to pay must carry cargo both ways. It is silly to assume that our competitors will fold their hands and meekly accept discrimination against their ships in our ports. They can and will retaliate against our ships in their ports, and if the game of matching discriminations is played to the limit, it may come to an ultimate decision on the ocean—but not with merchant ships.

The World War forced us into an abnormal and, for the most part, short-lived national interest in maritime matters. The ship—like the codfish of old Massachusetts—became a sacred and almost mysterious object. Our advocates of government ownership of anything and government regulation of everything turned necessity to virtue and gave us the Shipping Act of 1916, with a Shipping Board and a lot of other paraphernalia, calculated to heighten the mystery.

War Fleet

We entered the war. We built ships as we built cannon, to beat the Germans. The armistice left us with a fleet of some twelve hundred vessels as part of our surplus war material. We cleaned up the rest of our surplus with reasonable dispatch, but the sacredness of the ship endured, backed by a young and growing government bureau and helped by a mixed political situation. We did not clean up our shipping surplus. It is still with us.

The Merchant Marine Act of 1920 declared manfully for a private-owned merchant marine, and then did its best to make private ownership impossible by mandating the Shipping Board to continue the operation of the ships. It put forward three indirect protections: preferential rail rates, discriminating duties, and the extension of the coastwise laws to the Philippines. There has been no real attempt to make these effective and there probably never will be. There matters rest today, and it seems to some of us that in these two acts and in the present situation, this country has a problem which must be definitely disposed of before the solution of our other maritime problems can be successfully approached.

Government Merchant Marine

It must first be decided whether our merchant marine is to be individual or government. It cannot be both. Government ownership and private enterprise cannot live permanently in the same house. If government ownership is the answer, then the sooner the private owner knows it the better. In fairness to the men who are doing their honest best to keep the American flag afloat, they should be told where they are to stand.

Government Operation

Admittedly, it is "government operation or no operation at all" in the foreign trade for the present. But unless we believe that state socialism is our ultimate destiny, we would better have it "no operation at all." Nationalize your water transportation, drive private initiative and enterprise from that field, perpetuate a government bureaucracy in a purely commercial undertaking of some magnitude, and the cancer will not be long in spreading. Nationalization of rail transportation will follow as surely as night follows the day, and with the arteries of trade in the hands of the bureaus, industry must ultimately take the same road.

With our rather general indifference to marine matters, there are probably many who do not take the existing state of affairs very seriously. The ships were built with the people's money. They are presumably being operated in the people's interest. Let it go at that. But if you will translate the situation into terms of your own interest and ask yourselves whether you would like to face government competition—actual or potential—in your business, you will have a better conception of the prospect which confronts the private American shipowner. Our problem today may be yours tomorrow.

Taxpayers Warned

From the taxpayer's standpoint, there are other things to consider. The Shipping Board's last appropriation was around thirty-five million dollars. It provided for no new construction. Three-quarters of a million a week is quite a price for a doubtful luxury. It may be some satisfaction to know that here, at least, we are showing the way to Russia. A few weeks ago a Moscow dispatch stated that Trotzky was asking for

some few million rubles to build and operate a government merchant fleet which would enable Russia to transport her own products and free her from the excessive freight charges imposed by foreign carriers. The reasoning has a familiar ring.

It is not the fault of this or any other Shipping Board. All of them have performed remarkably well in the face of numerous impossibilities. They are expected to establish a privately-owned merchant marine and thereby commit political suicide. They are expected to sell to private owners, but they cannot guarantee those owners against government competition. They are mandated to operate unprofitable trade routes, expected to keep freight rates down and wages up, and then damned for losing money. They are up against general problems almost beyond human capacity, with the added handicaps of a political makeup and a constantly changing personnel.

International Competition

There is another thing to be considered when we talk government operation. It is intangible, but it may be very real later on. Shipping is essentially an international business. No one can question our right to do as we please with our own, but if we perpetuate a nationalized merchant marine, our foreign competitors must ultimately do likewise in one form or another. We are competing with peoples whose national existence depends on their seafaring activities. They will be dealing with their backs to the wall. Private competition in the world's markets has done much mischief, but it is gradually achieving a more reasonable basis for settling its disputes. National competition would find such an achievement impossible.

There is only one way for the Government to get out of the shipping business—and that is, to get out. Abandon operation, lay up the ships, keep the best of them in condition and sell them as opportunity offers, without hampering restrictions. The only alter-

native to getting out is staying in and going the whole hog. We are not far from the cross-roads. War construction was not of the best. Another few years, and the present Government fleet must be replaced or its routes abandoned. Already there is talk of an appropriation for new construction. A Government building program is the end of our privately owned merchant marine. It will commit us definitely and almost irrevocably to the uncertainties of state socialism.

Proposed Program

We must lay our foundations before we begin to build, and some of us feel that there must be tearing down before the foundation is laid. It is popular and proper to decry our mania for passing laws, but we seem to have forgotten the meaning of repeal. Given a proper start, American initiative and enterprise in the natural course of our development will give us an American merchant marine as and when we need it. It cannot be done overnight, and there is no necessity that it should be.

You will want something in the way of a program. I ask you to consider

First—Repeal of the Shipping Acts of 1916 and 1920, which means withdrawal of the Government from the shipping business.

Second—Mail subventions for such fast passenger vessels as the national interest requires.

Third—Maintenance, extension and encouragement of the principle of protection in our domestic trades.

On these three points we can anchor our foundations for the present, and from them we can build. You cannot hurry a natural growth, but we have at least ground to hope that the time will come when we will stand amongst the foremost maritime powers, holding our own in free and fair competition. When that time comes, it will see our greatest achievements centered on the Pacific Ocean.



San Francisco "The Western Capitol of Capital" and the administrative center for the commerce of the Pacific.

DISCUSSION BY PACIFIC COAST STEAMSHIP OPERATORS ON PACIFIC COAST SHIPPING PROBLEMS

For the purposes of the conference on Pacific Ocean shipping at the mid-year meeting of the Western Division of the United States Chamber of Commerce, the general address of Mr. Cushing, which is reproduced in the preceding pages, was printed and circulated about three weeks before the meeting. A number of prominent Pacific Coast shipping men were asked to appear at the meeting with set discussion. On the following pages we reproduce the papers presented.

A NAVAL SOLUTION

By RALPH J. CHANDLER

Vice-President and General Manager, Los Angeles Steamship Company

AS Mr. Cushing has already remarked, the problems which the shipping men of the Pacific Coast are facing, though differing in detail, must necessarily, of course, be generally the same as those which confront all shipping men in this country. We are all, I believe, firmly convinced that the Pacific must become the great field for United States shipping development. Here on the western coast, supported by a great country which is making rapid strides in the production of all manner of manufactured goods, we face the largest potential market in the world—the Orient. Over across the Pacific there are several hundred million people slowly but surely developing an appetite for goods which we can supply. Persistent enterprising trade builders are introducing our goods to these buyers. Our export cargo tonnage will grow in proportion as we are successful in meeting the conditions of this market in keen competition with other nationals who also recognize these same possibilities and who are just as actively working to secure the benefits for themselves.

We all take pride in the accomplishments of America's clipper ships of many years ago and of the striking successes accomplished through American enterprise with the sailing ships of that period in competition with the best that Europe could produce. In those days the national need arose and it was applied promptly and effectively.

There is a national need now—a need to develop foreign trade both export and import. The need is growing because our industries have a surplus after meeting the demands of home consumption. The spirit of our people is as enterprising today as it was in the days of our clipper ships, yet we are not building an American merchant marine under steam which can at all compare with the mark we made under sail. This is a condition, of course, which we all admit but which the majority of us claim we cannot remedy while hampered with the property and operation of the United States Shipping Board.

I am wondering, gentlemen, whether we are not thinking too much about the effect without going after the cause. The Shipping Board is operating and disposing of government property according to its best ability in an attempt to meet the demands of the taxpayer in this country. We complain that because the Shipping Board offers tonnage at a low figure the American merchant marine is not being supplied with modern vessels to meet today's conditions. We com-

plain in other instances that because the Shipping Board covers a route at a loss, private enterprise is prevented from handling that service at a profit.

There is truth in these complaints, but when we analyze what do we find? We find not an incapable or an unbusinesslike Board, but the presence of a large number of ships which are commercially obsolete and which are clogging the wheels of progress. The people of the United States look upon that part of their property which is handled and operated by the United States Shipping Board as a business investment which should be turned into money.

The majority of that property never was a business investment—it was war material. Our nation is basing its entire argument on a wrong hypothesis. The United States spent hundreds of millions of dollars for war material. It was vital to the success of our army and navy during the war that merchant ships be provided in great numbers. These merchant ships were just as much war material as the scores of torpedo boats which are now tied up in San Diego harbor, for example. They were just as much war material as the thousands of automobiles, as the airplanes, as a great majority of manufactured goods which were needed to secure the success of the war.

Every tax-payer realizes that the provision of war ships, of torpedo boats, of airplanes and other material for the conduct of the war was the price he paid for the safety of his country. These expenditures were in the form of national insurance. It mattered not whether the money was spent for cannon and ammunition or for means of transportation to carry men and supplies to the scene of the war—all these supplies should properly have been classed as war material.

The navy is scrapping battleships just as are the navies of other countries under international agreement. Sensible men realize that such destruction of expensive equipment is not "loss", but that the money expended for that equipment was the cost of national insurance and as such was fully justified when it was spent. The navy holds many millions of dollars in floating equipment, secured for the war but now tied up. Some of this will be useful should another war come upon us. In any case, however, the cost of all of this was justified when the money was spent. We know that. We realize it fully and we do not demand that any of such material be salvaged at the expense of today's industries.

Apparently the people at large regard the merchant ships we built during the war as something different. These, they demand, shall be made to return their cost insofar as possible, regardless of the effect such a policy may have on today's business.

What is the result? We find today that after meeting every possible demand during the six years that have elapsed since the war was over, after saturating shipping with war material in the form of merchant ships built primarily for war purposes, we still have a great tonnage left. The Shipping Board is struggling with this tonnage to convert it to the uses of the American merchant marine or to make it pay its keep.

As a consequence of all this the wheels of American shipping are "mired in the mud" of wartime material, which experts are trying to adapt to modern-day business needs. We have tied up the destroyers we did not need; we have scrapped and forgotten the hundreds of millions of dollars worth of materials which have served their purpose, because they gave us national insurance when we needed it. Why, then, should we not scrap or tie up that which is left of the property handled by the Shipping Board which cannot be adapted to today's needs? Should another war come upon us, many of these bottoms which are not needed today would be made to serve a useful purpose just as many of the navy's destroyers that are now tied up would be used again.

I suggest, then, that instead of trying to force into the American merchant marine bottoms which are not needed and cannot be profitably operated, those bottoms be turned over to the navy or to other government hands and tied up against a possible future need.

We have a bright future in shipping on the Pacific if we will work hard and use the best of keen-edged tools. Our ships must be the best that can be produced, each for her particular route and service; we must have a maximum of economy in operation; we must have facilities equal to, or better than, any other merchant marine—or we cannot hope to compete with other nationals.

The suggestion often advanced that the Shipping Board withdraw from all operations is a destructive type of suggestion without the offer of a constructive alternative. We have to realize, however, that through the Shipping Board, this nation is now operating at a heavy overhead expense a lot of war-time-built ves-

sels in competition with what private interests are trying to create in the way of a really modern merchant marine. This condition constitutes a serious menace to American shipping, which, as a result, is being called upon to fight with a "blunderbus" instead of a modern rifle. Let us not forget that while we are lying practically dormant the nations with whom we have to compete are actively building the most modern of vessels.

As the constructive alternative I suggest that all of the nation's war-built vessels, which are unsuited to modern trade shipping requirements, be in effect "escrowed" with the navy for possible use in case of war, but removed for all time from the commercial field.

As more detailed suggestions I would offer that of:

1. Special government pay for mail movement by water;

2. That the right to operate ships in connection with transcontinental freight movement to the Orient be restored to the railroads, at least until foreign trade development justified the operation of independent steamship lines under the American flag.

There is capital and enterprise for the shipping business on the Pacific, provided that capital and enterprise are given a clear road to travel. Capital will not build new ships of the types required for really successful operation as long as bottoms are being offered on the market at one-tenth or less of the cost of new ships. Capital will not embark upon the development of new trade routes if it faces the great obstacles of its own government-operated property.

If the people of the United States could be brought to regard the undigested portion of government property, now in the hands of the Shipping Board, as war material which has served its purpose and which was worth the money we paid for it, then that material might be taken entirely out of the hands of commerce and the way left open for real enterprise to prove that it is as effective today as it was in the days of the clipper ships.

The immediate result of turning shipping frankly and freely over to private enterprise would be the stimulation of shipbuilding in our own shipyards and the keen, aggressive upbuilding of trade routes along effective, business-like lines with which the people of this country have long proved themselves among the most capable in the world.

THE AMERICAN SHIPPING POSITION

By HARRY S. SCOTT

President, General Steamship Corporation, San Francisco, California

THE problems which the shipping men of this country have to meet are as complex as any that confront the world of business today. The advocates of government ownership and government control and operation have been most actively at work, and have taken advantage of the situation created by the World War to accomplish their purpose. The question has been debated at length for several years and is an ever present and fruitful theme for discussion wherever shipping men get together. Mr. Cushing, who has just addressed you, handled the subject in a masterly and business-like way, and I fully concur with him in his conclusions. I believe he has presented to us the situation as it really exists today, and I fear I can add but little to what he has said.

"It Might Have Been"

I have often wondered what the position would have

been had the United States not entered the war and had she not built this enormous fleet of cargo steamers and left us with the problem as to how best to dispose of it. Whenever the proponents of the maintenance of the government in the shipping business are hard pressed for argument, they never fail to fall back on the statement that our navy needs a large fleet of cargo steamers as an adjunct in case of war. It might be interesting to you to know that the present naval fleet of the United States, both in commission and reserve, consists of approximately 758 vessels, of which number some fifty ships are of the battleship and cruiser class. Out of this total number approximately 408 are in commission, 334 out of commission, and 16 under construction. The fleet consists of, in addition to fighting ships, a complete assortment of tenders, repair ships, colliers, oil tankers, ammunition ships,

A LOS ANGELES FLEET



FOUR CRACK LINERS

In the assembled view at the upper left are shown, at the top, the Calawahi and at the bottom the City of Los Angeles, operated regularly on the Los Angeles-Honolulu run; and in the center, the two fast coastwise liners Yale and Harvard. Above are four interiors giving an idea of the appointments of the Yale and Harvard, which operate on an over-night trip Los Angeles-San Francisco. At the left is shown one of the de luxe suites on the City of Los Angeles.

cargo ships, transports, and the like. As the fleet contains a number of colliers and supply ships, it is undoubtedly a complete unit in itself, especially in view of the fact that it is now on an oil fuel basis. I have never seen a statement showing the estimated requirements of the navy for cargo tonnage in case of war.

American Privately Owned Fleet

We now have under the American flag a fleet of cargo steamers, privately owned and operated, large enough and capable of making voyages of any length that is equal in class and speed, if not the peer, of any fleet of cargo steamers under any flag, consisting of something over 265 vessels, with a gross tonnage of 1,354,386 tons. This fleet of vessels is principally operated in our protective coastwise trade and has been largely increased since the war and the completion of the Panama Canal, prior to which time the fleet engaged in the intercoastal trade consisted of four or five companies, two of whose fleets, operated by the American-Hawaiian Steamship Company and the Luckenbach Steamship Company, formed practically 90 per cent of the tonnage. We now have fifteen companies engaged in this coastwise trade.

It has been claimed that in addition to a fleet of cargo ships, there should be a fleet of fast liners, suitable for conversion during war. I do not know of any steps that have been taken with regard to this particular class of vessel, but I do think that the proper procedure in this case would be for our navy to include in their annual building program one, two or three vessels of the type they require, to be sold upon completion at cost or less than cost to the regular passenger lines, with which to carry our mails in foreign trade. I do not know what the requirements of this class of vessels are on the Atlantic Coast, but I do feel that several such vessels could be well used in the Pacific, augmenting, for example, the mail steamers operated by the Oceanic Steamship Company from San Francisco to Australia, and possibly the Los Angeles Steamship Company in their services between Los Angeles and Honolulu. If these vessels were sold at a price on a parity with the first cost of similar vessels built in foreign yards, it would enable the American companies to compete on a more equitable basis.

American Working Conditions

During the past twenty-five or thirty years the working conditions and living conditions of the American sailor have been improved to a great extent, at a correspondingly heavy expense to the owners. I do not believe, however, that there is a single owner or operator of American flag ships who regrets these changed conditions. It has made it possible to attract a better class of men to follow the sea, with increased manning efficiency. Nevertheless, this increased expense is pertinent with regard to vessels operated in unprotected trades by companies attempting to maintain American flag ships in competition with those of foreign flags. Here the initial cost of construction and the corresponding additional cost of insurance, depreciation, and repairs legally enforced in this country, and the standard of living and working conditions aboard American ships, which are so high as compared to our foreign competitors, who are permitted to engage the services of cheap Asiatic labor, unaccustomed to our high standard of living, are, I am sure you can appreciate, working to a very serious disadvantage. Suppose, for example, one of our manufacturing companies was required by law to construct a

factory of very high-class material and provide excellent accommodations for their employees, with the very best of subsistence and working conditions, and was asked to compete with a neighboring manufacturer who was able to build the cheapest class of manufacturing building and use an Asiatic class of labor under Asiatic standards of living. How long do you suppose our high-class competitor would last? Yet this is the condition that exists today with regard to our American ships competing with foreign ships.

Remove Barriers

Mr. Cushing stated very forcibly that when we require and want an extended American merchant marine, we will get it, because our interior merchants and farmers will be the first to raise a cry for a repeal of the hindering laws that now work so greatly to our disadvantage, and I understand Captain Robert Dollar has recently said equity and fair dealing to American shipping require that these unequal barriers be removed and American ships engaged in the foreign trades allowed to compete under such conditions as will permit us to participate in this world business. To these sentiments I give my heartiest approval. We should, of course, continue to use our protective legislation for the ships engaged in the coastwise or protective trades.

Government Operation

It is my understanding that the platform on which President Coolidge was so overwhelmingly elected contained the assurance of a business-like and economical administration of our government, and that the administration believed in keeping government out of business. Under these circumstances I do not see how the administration can continue to operate the present government merchant fleet under the Shipping Board, as it is evident to all that a loss in operation of from \$35,000,000 to \$50,000,000 a year is not an economical venture, nor is it sound business, and this is true whether we believe in government ownership or not. If the program to get our government out of business is to be followed, one of the first and most important things that should be done is the abolishment of the Shipping Board as now constituted and the withdrawal of all operation of Shipping Board ships under government management and control.

A short time ago a very intensive campaign was started and carried on for the enactment of a bill in Congress providing a subsidy for American ships engaged in the foreign trades, and after a bitter fight the cause was lost, for the reason that, with the exception of a few of our people along our coastline, there was a decided lack of interest by the public generally. A few months ago the Interstate Commerce Commission announced their intention of putting into effect a section of the Shipping Act providing preferential rail rates on American flag ships, and there was likewise a movement towards the extending of our coastwise laws to include the Philippine Islands. When the purpose of these bills became known, there was not a chamber of commerce, particularly on the Pacific Coast, that did not rise up in indignation and pass resolutions protesting against both of these movements.

American Shipping Position

I believe the three examples above mentioned are a strong indication of the real sentiment of the people against an extended American merchant marine. As Mr. Cushing has so forcibly said, if the government is going to get out of the shipping business, such an intention should be immediately announced, or a

time set in the near future when they will take such steps, and the great Shipping Board tonnage, which is such a menace to us all and destroying the profitable operation of world tonnage, will be finally disposed of. To that end I am going to propose the adoption at this meeting of a resolution to be sent to the President of the United States, and a copy thereof to the members of his cabinet, and to members of our Congress, expressing our views upon this question.

The Shipping Act of 1920, by its terms, permits the taking of the action I have suggested. Section 7 of the act provides that the Board is authorized to sell or, if satisfactory sale cannot be made, to charter such of the vessels referred to in Section 4 of the act (under War Emergency Construction), or otherwise acquired by the Board as will meet these requirements, to responsible persons who are citizens of the United States, who agree to establish and maintain such lines upon the terms of payment and to the conditions as the Board may deem just and necessary to secure and maintain the service desired. If any such steamship line is deemed desirable and necessary, and if no citizens can be secured to supply such service by the purchase or charter of vessels on terms satisfactory to the Board, the Board may operate vessels on such line until the business is developed, **unless it shall appear within a reasonable time that such line cannot be made self-sustaining.** It is also provided that where steamship lines and regular service have been established and are not being maintained by ships of the Board at the time of the enactment of this act, such lines and service shall be maintained by the Board until, in the opinion of the Board, the maintenance thereof is not business-like and against the public interest. Further, that whenever the Board shall determine that trade conditions warrant the establishment of a service or additional service under government administration where a service is already being given by persons, citizens of the United States, the rates and charges for such government service shall not be less than the cost thereof, including a proper interest and depreciation charge on the value of the government vessels and equipment employed therein.

It is very evident from these provisions that it was the intention of Congress that the operation of the various lines should be conducted in a business-like manner and that rates and charges should not be less than the cost thereof. How can our government justify the continued operation of its fleet by the Shipping Board when Congress has been called upon to provide from \$35,000,000 to \$50,000,000 a year to maintain these services?

Proposed Resolution

The resolution I propose shall be adopted at this meeting is as follows:

WHEREAS, under the Shipping Act of 1916 and the Merchant Marine Act of 1920, the United States Shipping Board appointed thereunder has established and put into operation steamship lines from ports in the United States to the markets of the world and has likewise established through such lines United States postal service, and is continuing to operate such steamship and give such service in active competition with privately owned and operated steamship lines; and

WHEREAS, it appears that a deficit of from \$35,000,000 to \$50,000,000 per annum has been created from the maintenance and operation of such government steamship lines, and it is apparent that such lines cannot be made self-sustaining for the reason that the rates and charges for such service are less than the cost thereof; and

WHEREAS, the maintenance of such lines is unbusiness-like and against the public interests and the people's money should not in equity and good conscience be voted by Congress for such purpose when to do so will destroy the privately owned steamship lines which are fully able and willing to give and furnish such service; and

WHEREAS, the course of events during the past few years has demonstrated that the American people do not approve of the course of the government in carrying on the shipping business, and a great apathy exists among them concerning the maintenance by the government of an extended merchant marine service;

RESOLVED, by the Western Division of the Chamber of Commerce of the United States in session assembled in Los Angeles, That we protest to the President of the United States and the Congress against the continued maintenance and operation by the United States Shipping Board of steamship lines from ports in the United States to the markets of the world because not self-sustaining, and that such course is unbusiness-like and against the public interest.

RESOLVED FURTHER, That a copy of this resolution be sent to the President of the United States and to each member of Congress, and that special effort be made by the members of this division of the Chamber of Commerce of the United States to impress upon the United States Senators and Congressmen from their respective states, the importance and necessity of securing for the business interest here represented the relief herein requested.

SHIPPING DEVELOPMENT ON THE PACIFIC COAST

By H. F. ALEXANDER
President, Pacific Steamship Company

I SINCERELY regret that I am unable to be present at the meeting of the Western Division of the Chamber of Commerce to personally present my views on our shipping problems.

Never before has shipping attracted the attention of the man who thinks as it attracts him today, and more specifically his thoughts are directed towards the Pacific and the people who dwell along its coasts. Our development of the West is reaching its final stage; already people are crowding into our Pacific Coast

cities, and as history has proved to us that our civilization has moved westward, so will it continue to move. Our people cannot look to the East, and now that they have reached the sea the movement will be upon the sea, and by means of ships they will establish closer relations with the peoples who dwell beyond the horizon.

Trans-Pacific

One must only look back a few years to see the small beginnings of our trans-Pacific trade. Compare

the ships of then with the ships of today. Compare the tonnage moving then with the vast commerce moving today. Compare the number of lines then with the number now. Thirty years ago three lines operated 40,000 gross tons of shipping across the Pacific; today sixteen full-fledged companies operate seven hundred and eight thousand tons.

Visualize an increase of 167 per cent in exports in ten years and you will see the vision that I see of the future.

Coastwise

Hand in hand with this development moves the coastwise trade in which I am vitally interested. I have seen our communities of the north grow from small towns to teeming cities. I have seen the steady growth of San Francisco and have witnessed the marvelous growth of Los Angeles, and I have endeavored to keep pace with this progress by adding ships to our coastwise fleet to meet the ever increasing demands for service. Some have thought me visionary, but to me the problem of supplying a coastwise service is very practical and real. People travel differently now as compared with ten years ago. They expect better accommodations, up-to-date service, better meals, and, in fact, a higher standard must be maintained if we are to keep pace with the progress that is going on about us.

Aside from the problems incident to our development we have many vexatious laws and regulations. Our coastwise trade is restricted to American ships and the foreigner cannot enter his low operating cost ships against us. If he were permitted to do this it would only be a matter of time before American ships would disappear from the coastwise trade. Our law excluding foreign ships from the coastwise trade has stood the test of time and demonstrated the wisdom

of those who sponsored the measure. It is the one outstanding law that has been helpful and beneficial to American shipping, and without it I think it is safe to say there would have been a very small number of American ships available when we entered the World War. As it was, our coastwise fleet was large and adaptable enough to carry on until more ships could be supplied.

Equality Necessary

There is no reason why the American owner could not operate as successfully in the foreign trades as he does in the coastwise trades if he were on an equal basis with the foreign operator.

The first big problem confronting the American owner who desires to continue and prosper in the foreign trade is to revise our laws and place our ships on a parity with the ships of other nations. There are many laws on our statute books today which are obsolete and which could be removed to the infinite advantage of the ship operator and many other laws could be changed which would help him materially.

At the present time there is a committee of ship-owners working on the revision of our navigating laws, and when that program is completed and presented to Congress, if we can secure the backing of the American business man, we can constructively help the American ship.

How much more satisfactory it would be to you to be able to deal with American companies whose headquarters are here and whose interests are in this country. We speak the same language and our customs and ways of doing business are the same as yours. All we ask for is an even basis with our competitors and from that point on the American operator can take care of himself.

HAMPERING RESTRICTIONS AND HANDICAPPING LAWS

By HUGH GALLAGHER

Operating Manager, Pacific Steamship Company

NO doubt all of you are familiar with the cry of the shipping man against "hampering restrictions and handicapping laws."

Individuals have protested against our shipping laws and regulations, associations of steamship companies have appointed committees to make recommendations calling for changes, and enough publicity has been given to this subject to make it known to all who read. Almost any man in the street could tell you, if asked of him, that American ships are handicapped by too many laws, or he might better say, by too much red tape.

If he were asked to name some of these handicaps he would be hard put to answer, and such, I believe, is the case with many of you gentlemen who do not follow shipping as a means of livelihood.

Therefore, I thought it would be interesting to tell you a few of the things we have in mind when we say we want the laws changed or repealed.

Compulsory Pilotage Dues

For example, you would not think it necessary for a ship in the coastwise trade passing in and out of Los Angeles harbor four times in a month and manned by a captain fully qualified as a pilot, to have to pay pilotage each time the ship passes in and out. Yet

this is the case, and it is because of the law. The ship in question stops in at Victoria on the way south from Seattle, and because of this stop the ship is placed under Register instead of enrollment as provided by law, and to all intents and purposes she is considered as being in the foreign trade and therefore she must pay pilotage at all ports of call along the Pacific. No pilot is taken on board, the master has pilotage papers for all Pacific Coast waters; he takes the ship in and he takes her out, and yet the pilotage must be paid at each port. As a contrast, a similar ship trading between Seattle, San Francisco, Los Angeles and San Diego, but not stopping at Victoria, does not have to pay pilotage.

I think that all of the Government officials who enforce the regulations are agreed that it is unfair, but nothing can be done about it until the law is changed.

Quarantine Inspection

Another, you might say amusing if not ridiculous regulation, is that a ship leaving Seattle stopping at Victoria en route to and turning at San Francisco, is exempt from quarantine inspection, but if that same ship continues south from San Francisco to Los Angeles, all passengers and crew must be mustered on deck and passed by quarantine officials before ship is

allowed to dock at San Francisco. Once again it is the law. Not anyone but believes this inspection to be absolutely unnecessary and you might think that such a law could easily be changed. Still I have tried for two sessions of Congress to get an amendment put through which would alter this condition and relieve our passengers of this annoyance. Senator Poindexter introduced the first bill and Senator Jones the second. It was approved by the Public Health Service and by the Treasury Department and reported favorably by the Committee on Commerce, but it has not passed. The Congress was so busy it did not have time to lend the poor shipowner a hand, and month in and out our ships are held up and passengers are mustered for examination merely because the law when enacted did not take into account the fact that some day there would be ports south of San Francisco.

Most of these regulations are relics of the past and they have outlived their usefulness. The officials who enforce them know how absurd they are, but they are powerless to do anything.

Boiler Tests

Another example is the inspection of boilers. Every year a ship must undergo inspection, and the law is that the boiler must be subjected to cold water hydrostatic test of $1\frac{1}{2}$ times the working pressure. Not to mention the damage caused by the cold water checking the metal, consider the strain on the boiler that must undergo $1\frac{1}{2}$ times its normal working pressure. After this test a boiler is usually found to be leaking. Stay bolts are strained and tubes leak. The life of the boiler is materially shortened, and, as a matter of fact, it is rendered less safe than before. No other nation applies this test during inspection. English inspection test is at the regular working pressure, and a boiler that ordinarily works at 220 pounds is stressed 220 pounds, not 330 pounds as in the case of American inspection. No railroad locomotives, no powerhouse boilers, no boilers that I know of are subjected to this strain, but once again the law makes itself felt aboard ship. Inspectors with whom I have talked know this test is too severe, but not one can do anything until the law is changed. Recommendations calling for changing this law have been made time and time again, but it is too technical for Congress to understand or of too little consequence to the members; I don't know which. If there was one practical shipping man in Congress, either in the House or Senate, we might get a hearing; but there is none. The English Parliament has a very great number of members who are engaged in shipping, and such conditions could not exist long unchanged in that country, but here we are a small voice crying in the wilderness.

Repairs Foreign

Another thing which you will find hard to believe, excepting for the fact that it is only too true and easily ascertained, is that if an American ship is painted or makes repairs or alterations or improvements in a foreign country, the value of this work must be declared on arrival at first American port and a duty of 50 per cent must be paid. Thus we see a ship leaving San Francisco taking aboard a stock of American paint. She goes into drydock at Shanghai and uses this American paint. When she gets back to the first American port a declaration covering the value of this paint must be made and a duty paid thereon, together with the cost of the labor, even though that labor is performed by the ship's crew. Can you imagine how you would feel if you were compelled to pay 50 per cent duty on paint used on your

factories, your houses, your cars? The principle of the thing is the same, excepting that in the case of the ship the work is done at a foreign port. The law which compels this was passed only a couple of years ago, when everyone was crying the need for helping American ships. I don't believe it was ever intended to be so drastic, but it is and there is no getting away from it.

Hatch Sealing

Amusing, if it were not so expensive for the shipowner, is the sealing of hatches. For example, a shipment of one case of goods arrives at San Francisco and is transshipped on a coasting ship to Los Angeles. After the case is loaded the ship is held until a customs officer seals the hatch. The carrier is bonded and all that, but the law says seal the hatch, and seal it they do. That this case may be taken out through a vessel's side ports without disturbing the hatch seal makes no difference. When the law was passed they did not have side ports, and consequently they do not now exist legally. The ship may be held up while this sealing is done, which means expense, and when she arrives she cannot begin work until the customs man skillfully removes the seal. If the ship gets in after hours she must pay the overtime involved in calling the customs man out to remove the seal. Either that or lay idle until morning. Such things might have been all right years ago when ships put to sea to deliver contraband and traffic with smugglers, but today it is a useless thing which is costing the shipowners and the government itself thousands of dollars annually.

Narcotics

Not long ago well meaning people prevailed on Congress to pass a law which would make a ship liable on arriving at an American port for the presence of narcotics. They had the very best of intentions and to one unfamiliar with shipping it would appear as though the narcotic evil was at last about to be squelched, because, they reasoned, if we can thus prevent the narcotic from coming aboard we will keep it out of the country; if we make the ship and her master responsible, they will see that none comes aboard. But like other laws designed to uplift humanity, it is impractical. How can a ship and her master prevent narcotics from coming aboard when they have arrayed against them the cunning, calculating, criminal element of the four corners of the world? Would anyone hold a hotel liable and place a big fine on the manager if opium were found on one of the guests in one of the rooms? Would you hold the conductor of a train liable and fine him if cocaine were found on a passenger in a day coach? Picture a ship taking aboard 500 Orientals with their picturesque array of baggage, loading thousands of tons of cargo for American ports, picking up dozens of first-class passengers at various ports along the route. I ask you, how can a master, whose principal and everlasting duty is to manage and navigate his ship, how can he be held responsible for the presence of a tiny vial of narcotics? Still the law says he is and we have witnessed a ship so heavily fined that it was forced to suspend sailings until bond could be furnished. That it took several inspectors many days to thoroughly search the ship to find the hidden drugs made no difference. The law said the master was liable, and that was all there was to it.

Ships Articles

I could go on and give you many illustrations of the peculiar regulations under which we operate.

Sometimes I believe that we are still suffering for the sins of our forefathers—the old pirates and freebooters who operated at the dawn of shipping. Some of the present-day customs are relics of the long ago. For instance, signing ship's articles. Long ago a group of men would undertake a voyage for trading purposes and before starting they would sign an agreement to split the profits. Later on men were hired and for fear they might demand a share of the profits it was then set down in the contract that they were working for wages. Today if we send a ship from Los Angeles to Seattle we must call in a shipping commissioner to witness the signing on of the crew. Elaborate data are set down and enough motions are gone through to make one think the voyage was to be around the world several times and back again. When the ship arrives at Seattle another shipping commissioner must be called in to witness the paying off of the crew. Granted that it is a good thing to file a record of men employed aboard a vessel which would be available in case of disaster, still why must the ship be bound by all the rules and red tape? If you employ men to run a train from San Francisco to Seattle you do not have to go through such contortions. If you employ men to build a house you do not have to call in a commissioner to witness their agreement as to wages, and when you pay them off you do not have to call in another commissioner to see that they get their money.

Why Pick on Ships?

And so on right down the line. It would look as though people sat up nights to figure out ways to make

it harder for ships. Just a week or so ago in Los Angeles there was an outbreak of an infectious disease, which has been checked by very efficient methods, and the first thing we knew, along came a doctor who said that all of our passengers must be examined before they could leave the city. I asked him if the same regulation was being enforced on the railroads, autos, and auto stages, and he said he believed that it was, but when we investigated we found out that only ship passengers were being held up. Just why they were picked on is one of the mysteries that we find so hard to solve in our business. People leaving by train evidently could not spread the germs, but, if they left town by means of a ship—well. However it was figured out, I know, but they were held up while the doctor felt their pulse and looked them over.

Some of these days the last straw will be added which will break the camel's back, and shipping men will become aroused and demand consideration. When you consider the millions of dollars which we spend annually along this coast and the thousands of men we employ, you will admit that we are entitled to a hearing. Not long ago a check-up on San Francisco showed that the annual payroll, repair, and supply bills amounted to \$85,000,000. I would estimate another \$40,000,000 at Los Angeles Harbor and a similar or greater amount at Seattle and Portland. An industry of this size is certainly entitled to a hearing, but until we have someone in the Senate or the House who speaks our language we will continue to be the small voice calling aloud in the wilderness.

DEREGULATE OFFSHORE SHIPPING

By R. D. PINNEO

General Traffic Manager, Port of Astoria, Oregon

I FIND it difficult to settle my mind on any specific program that could be adopted to increase shipping to or from American ports on the Pacific Coast so as to make it possible to build up an American merchant marine that could successfully compete with other nations and at the same time retain our American standards.

In the first place and at the present time, the Pacific Coast is favored with the best regular steamship service, coastwise, intercoastal, and foreign that it has ever had, and the rates charged on nearly all routes are not considered over-remunerative. The protected American routes will, in a way, take care of themselves. The trans-Pacific, Pacific Coast trans-Atlantic through the Panama Canal, and other foreign routes are the routes causing operators of American vessels the most anxiety at the present time. We now have a few American ships operating trans-Pacific from Puget Sound, Columbia River, and California ports, most of which are operated by the United States Shipping Board and backed by the United States Government. The service given by the best of these ships has been the means of handling many passengers and an immense fast freight tonnage that had, prior to their operation, been handled on foreign ships and transported by foreign rail lines to the Atlantic, the goods entering the United States at the nearest point to the eastern destination, the same being true on cargo in the opposite direction.

Government Operation

Now, the one thing seems clear to me is that unless the United States Government had been in a position

to back these services, we would not have had such routes established with American ships.

Outside Three Mile Limit

My plan would be first to correct our laws so that the ship owner could run his own business on the seas and not legislate for his operation outside the three mile limit, or while in foreign waters, or at foreign ports. Let the laws with reference to operation be the same as govern our foreign competitors. For instance, the measurement of ships for canal dues, load lines, employment, registering of ships and taxes to be made nominal, a general law covering from all American ports; allow repairs to be made wherever they can be made the cheapest; American mail to be carried on American ships.

A Subsidy Plan

I have often thought that if a ship's subsidy could be formed, and it could be reimbursed by dues collected from foreign ships, that we could possibly work the matter out all right and force more tonnage to American ships. For instance, allow ships of the different nations to handle freight to or from our ports between their own nation and the United States, but when they bring freight from some other nation assess a tax of, say, a dollar a ton. For example, a British ship could bring freight from British ports to the United States and could handle freight from the United States to their own British ports without any tax, but if they handled freight from Japan, China, Germany, France, or other countries, be required to pay a dollar per ton if landed in or shipped from the United States.

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

THE DIESEL VERSUS HIGH PRESSURE STEAM

A Comparison Between Motorships and Turbine Steamers with High Pressures and Superheat as Considered from the Diesel Standpoint

SPECIAL BRITISH CORRESPONDENCE

Apparently the progress made in motorship building is becoming alarming to some of the lovers of steam. Considerable space is being given in the technical journals of Great Britain to claims made by the advocates of steam that in overall economy steam could beat the diesel if the users of steam went to the same initial pressures used by the diesel engine. We are presenting here two articles attacking the problem from two directly opposed viewpoints.—(Editor.)

ALTHOUGH very little practical work has yet been done and very few actual results are available, a good deal of prominence has lately been given to the possibilities of improving the thermal efficiency of steam turbine plant, by which, it is claimed, the efficiency of the diesel engine can almost be equalled. As the motor vessel has made such rapid headway, it is obviously of importance to shipowners and engineers to investigate the claim now being made, and to ascertain whether the hopes of the steam turbine advocates can be realized.

It should at the outset be emphasized that comparisons can only be made between diesel engines and steam turbines, since the advantages claimed by the adoption of the new methods in the generation and utilization of steam can only be gained in an important degree when applied to turbine machinery and not to reciprocating steam engines. Moreover, the turbines must be of the high-speed type, which involves the use of single or double reduction gearing. It may therefore at once be stated that no claim for increased reliability can be made for the steam plant, as compared with the motor drive, as might, perhaps, be the case with reciprocating steam engines. For it is now generally accepted among marine engines that the geared turbine—and especially the double reduction geared turbine—is liable to cause more trouble at sea than a modern diesel engine of good design. Hence, in order to show superiority over the motorship, the turbine vessel must have a lower operating cost, making due allowance not only for fuel consumption but for interest and depreciation on capital, difference in freight earning capacity, wages of personnel, and other factors.

Briefly, the means by which high efficiency can be obtained with turbine plant are as follows. A high boiler pressure has to be utilized (working at 500 or even 1000 pounds per square inch); pre-heaters have to be installed for heating the air supplied to the boilers; the steam after partial expansion in the turbine has to be tapped off and reheated; the steam temperature has to be very high (about 750 degrees Fahrenheit), representing an unusual degree of superheat; and a special system of feed water heaters to the boiler much more elaborate than those normally used has to be installed.

At sea, the adoption of reheaters appears to be impracticable, owing to the very large steam pipe that would have to pass twice through the bulkhead between the engine room and boiler room. Hence this may be ruled out. It will be gathered that the cost of

the installation will be very considerable owing to the accessory plant, and high boiler pressure and superheat. This will also add to upkeep charges. Probably the cost of machinery and boilers will scarcely be lower than that of a corresponding diesel engine.

We may now examine the fuel consumption of a motorship, and a steamer equipped with these modern devices for increasing efficiency. Sir Charles Parsons is one of the chief protagonists of the employment of high pressure steam. That being the case, the estimates (for it must be made clear that there are no results yet available) which he has put forward may be taken as representing the best possible case that can be made. He states that for a 5000 shaft horsepower installation, with a boiler pressure of 500 pounds per square inch, which is about double that normally adopted, with steam superheated to 700 degrees Fahrenheit, the feed water heated to 350 degrees Fahrenheit, and with boilers fitted with pre-heaters, an oil consumption of about 0.57 pound per shaft horsepower hour can be obtained for the turbine only, and 0.69 pound per shaft horsepower hour including the auxiliary machinery.

It is obvious that the latter figure is the only one of importance to the shipowner, and it may therefore be compared with the results obtained in large numbers of motor vessels now in service. Almost without exception, a modern motorship equipped with diesel-electric auxiliaries can show an over-all fuel consumption including the oil required for the operation both of main and auxiliary machinery, of about 0.42 to 0.43 pound per shaft horsepower hour. In other words, assuming the same grade of liquid fuel be employed in each case, the fuel bill of the turbine steamer would be well over 50 per cent in excess of that of the motorship. If, however, diesel oil be used in internal combustion motors and furnace oil under the boilers of the turbine steamer, and if the former fuel is 30 per cent more expensive than the latter, the motorship would still have an advantage of nearly 25 per cent. But it must be remembered that in many parts of the world, the same price is charged for both grades of oil, and in any case, when diesel engine builders are forced to utilize the poorer grades owing to the stress of competition, they will readily do so. That this is the case is well instanced by the fact that already motorships are in service in which boiler oil is exclusively employed. Moreover, improved economy with oil engines may be anticipated, and only recently a series of tests carried out on Doxford engines on boiler oil gave a consumption of 0.37 pound per brake

The New Coastwise
Steamships of the Pacific
Mail Steamship
Company



The pictures on this page were obtained by a representative of Pacific Marine Review through the kindness of Chief Engineer Einar Lindkvist of the motorship City of Panama on her first entry into San Francisco harbor. Above is shown the City of Panama on her trials. At the left, the central platform between the two engines showing the valve operating gear. At lower left, switchboard. At lower right, looking down into the engine room, showing the overhead crane, a portion of the cylinders, starboard engine, and the lubricating oil tanks.

The City of Panama and her sister, the City of San Francisco, are being operated on the San Francisco-Panama coastwise run.



horsepower hour, which would be equivalent to about 0.4 pound per brake horsepower hour, including auxiliaries.

But it has yet to be shown that the claims of the high-pressure steam enthusiasts can be confirmed. All indications show that they are over optimistic. For instance, there is a power station in England equipped with boilers operating at 500 pounds per square inch, fitted with air preheaters, also reheaters, and special feed heaters—thus working under the best possible conditions—and an official statement has been issued that the thermal efficiency is about 21. On the other hand, Sir Charles Parsons has estimated in the figures he has put forward that with 500 pounds per square inch pressure, the over-all thermal efficiency would be 28 per cent. Thus it will be agreed that more proof will have to be put forward that the claims for low consumption can be achieved before ship-owners can be induced to embark upon what is undoubtedly an experimental scheme.

Whether pressures of 500 pounds per square inch will be acceptable to the marine engineer is another question. Again, it is well known that for the most part that cargo shipowners are not much in favor of

the geared turbine drive, and, if they do install steam plant, prefer usually to fit reciprocating engines. The turbo-electric drive may, of course, be employed in order to avoid the possibilities of danger with mechanical gearing, but in this case a loss of efficiency to the extent of about 15 per cent has to be debited against the steamer, making the economy of the motorship still more pronounced.

The motorship would still retain part of its usual advantage in the matter of deadweight capacity for a given voyage, since the steamer would need to bunker 50 per cent more fuel than the oil-engined craft. The motor vessel would also cost less to operate on account of the absence of stokers. Taking all circumstances into consideration, it would appear, at any rate from the standpoint of one who is closely connected with the diesel engine business, that the further progress of the motorship is not likely to be seriously impeded by the employment of high pressure boilers and other accessory plant of the nature outlined, in conjunction with geared turbines for ships' propulsion. So far as is known, no application of the system is impending and some practical results will be required before the claims made can be admitted.

HIGH PRESSURE STEAM VERSUS THE DIESEL FROM THE STEAM ENGINEER'S STANDPOINT

By SIR JAMES KEMNALL*

IN connection with the constant researches of engineers into methods of saving fuel, the adaptation of steam turbines to higher pressures and higher superheats has led to improvement in boiler construction, which have already been brought before the public, as applied to land installations, but inasmuch as the application for marine purposes will follow eventually, if only to compete with the diesel engine, some of the facts will prove interesting.

The gain that is to be anticipated from increasing pressure and superheat emanates from the researches that have been made in regard to the calories that are required to produce steam of the higher pressures.

Many experimenters have formulated tables on this point, but the most recent investigations, backed by experiment, are those of Professor Stodola (Switzerland).

All investigators indicate that as the pressure increases, the calories contained in the steam, which is equivalent to the calories required to produce it, diminish somewhat when the pressure increases above a given point, and it may be regarded as safe to assume that at any rate it costs no more in fuel to produce steam at 70 or 80 atmospheres than it does at 30 atmospheres, and according to Stodola, it is less, falling from about 668 to 656. Dealing with superheated steam, the rate of diminution in heat contents is even more marked than with saturated steam, from which it follows that with the increased pressure and superheat the calories contained are relatively still further reduced.

I have Sir Charles Parsons' authority for stating that the increases in thermal efficiency over that at 250 pounds, due to increased working pressure, would be estimated as follows:

500 pounds per square inch working pressure, 6 per cent;

1000 pounds per square inch working pressure, 11 per cent;

1500 pounds per square inch working pressure, 15 per cent.

Some of the Continental turbine makers put the saving even higher than this; one method of obtaining this saving being adopted at the present time is to use a small high-speed turbine for the high pressure, exhausting at about 300 or 350 pounds into an ordinary turbine. Obviously, in this case the whole work done by the high-pressure turbine is absolute gain compared to the work done by the turbine using steam at 350 pounds pressure.

30 Per Cent Thermal Efficiency

To put the matter of the saving in another way: Assuming a boiler efficiency of 84 per cent, the thermal efficiency, fuel to shaft horsepower, of the complete unit of turbine and boiler at 1500 pounds per square inch working pressure would be in the neighborhood of 30 per cent, which approaches very closely to the thermal efficiency realizable in large diesel engines, and the class of oil that can be used under the boiler is very much cheaper than that which is required for the diesel engines; and hence there would probably be an actual commercial saving in money in the use of turbines and boilers at high pressure, compared with the diesel engine, whilst retaining the advantages, elasticity and ease of manipulation of the steam turbine as compared with the diesel engine.

To obtain the desired results, a highly efficient steam generator is essential, in conjunction with feed heating or air heating, and, of course, superheating.

It is essential that pure feed water be used to avoid the introduction of scale or deposit-forming matter on the boiler heating surface, and the important questions of condenser tightness must be watched.

There is no reason why mechanical stoking should not be used for marine practice; in fact, we have a number of marine boilers running at sea at the pres-

*Abstract of paper before the Institute of Marine Engineers, October 21.

ent time, giving satisfactory results, with an adaptation of the underfeed mechanical stoker.

Construction Problems

Naturally, the construction of steam generators and their accessories that are safe for these working pressures requires full knowledge of the art, and great care in the material and workmanship.

It should be noted in this connection that, whilst the ultimate tensile strength of steel up to 300 degrees Centigrade does not deteriorate, in fact is slightly better, the elastic limit begins to fall very rapidly after 150 degrees Centigrade.

It has also to be observed that at 300 degrees Centigrade the elastic limit is about two-thirds of that at normal temperatures, and at 400 degrees Centigrade about half, and therefore the strength of the parts, or the dimensions of material subject to high temperature, have to be adjusted accordingly.

In view of the wise insistence on "safety at sea" as a first condition when considering any advance in practice, it may be well to point out that factors of safety of the order of four to five normally employed actually give much greater margin when applied to super-pressures, such as we are considering.

This will be readily seen by comparison of the actual maximum bursting pressures. For 200 pounds working pressure, a factor of safety of five allows an ultimate permissible pressure of 1000 pounds, and this pressure is within the bounds of possibility under very exceptional conditions. With a working pressure of 1000 pounds and a factor of safety of five, however, the steam pressure would have to increase to 5000 pounds per square inch before the factor of safety would be eliminated, and, as far as I am aware, no such case has ever been known, nor is it believed possible to raise steam to a pressure of 5000 pounds per square inch.

It may be well to remark at this stage also that, although increased care in design, material and workmanship is necessary to enable boilers having super-pressures to be built, when built there is no more difficulty in maintenance from leakage or any other standpoint, provided precautions are taken as to the use of clean feed.

I should have liked to have dealt with many other points affecting this very important subject, but hope that enough has been suggested to bring to mind a very fruitful line of advance in marine practice. As

things are at present, marine installations have to be operated at maximum economy if ships are to go to sea and obtain freights at all. Diesel oil-engine installations have made notable strides within the last few years, and many installations are giving the greatest satisfaction to their owners. Having regard, however, to first cost and maintenance charges, including depreciation, I am of opinion that a high-pressure steam installation could be made to compete with the marine diesel oil-engine installation in operating costs.

As far as reliability is concerned, it is not probable that the most enthusiastic diesel engine advocate would claim that the steam installations have yet been equalled.

PROGRESS IN COMMUNICATION

THE high standards set by Pacific Coast commercial leadership demand constant progress toward perfection in the mediums of communication. Some years back this was realized by the Radio Corporation of America and they established at Bolinas Bay, a few miles north of San Francisco, a powerful commercial transmission station of 200 kilowatt capacity, with which they have been for some time in direct trans-Pacific communication.

As an improvement to this service it is now announced that the new marine station of the Radio Corporation at Bolinas has been completed and turned over to the traffic department. This station required about eight months to build at a cost of about \$35,000.

Transmitter vacuum tubes are used similar to the tubes used in broadcasting stations. The new station puts 5000 watts into the antenna and a number of ships in the Atlantic Ocean have reported its signals as being loud and clear.

The station at Bolinas has, for some time, been under the control of the San Francisco office of the Radio Corporation in such wise that any business man in San Francisco or any one in telephonic communication with San Francisco, can call up the office at 28 Geary street and have his message transmitted from there by wireless to Hawaii or to Japan.

The new marine station will extend this service for shippers, shipowners, or other interested parties to ships on the seven seas.

This commercial service will, in the not distant future, be expanded to include Shanghai and other points in China.



Views in the power house of the transmitting station at Bolinas of the Radio Corporation of America. At left: The 200 kilowatt General Electric alternators which supply power for the commercial transmitting sets for communication with Hawaii or Japan. Center and right: Office of superintending engineer, showing control boards.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

A PALADIN OF THE FISH NETS

The Story of a Successful Pacific Coast Fisherman

BACK in the early 70's a young Italian landed in San Francisco. His name was Achille Paladini. In his youth he had worked as a fisherman on the romantic shores of the Mediterranean Sea. He saw the opportunities of similar industry on the sunlit shores of the Pacific, and the markets to be supplied in San Francisco.

He began operations in a small way with a countryman as a partner. Their first boat was the conventional lateen-sail rigged open-type craft, dependent on oars when the breeze failed. In this frail vessel was fitted a sand pot, holding a small fire, over which the frugal meals of the two men were warmed when they were out on the fishing grounds. Was the weather wet and stormy, a goodly jug of red wine had to do, with a cold meal. When the catch was taken, a course was set for port, and usually a start was made at or near low water, the sweep of tide through the Golden Gate serving to speed up the boat so that an early market could be made. The market in those days was on the wharf down below the sea-wall, where gathered buyers to whom sales were made by the fishermen.

This small beginning was the first step made towards the now large firm of A. Paladini, Inc., probably the largest handlers of fresh fish on this coast. A short history of the early work of Mr. Paladini may be of interest, and it will show, too, the tremendous aid the workboat gave to the making of such an immense business from so small a start.

To Achille Paladini is due the credit of seeing the advantage of mechanical power over sails for small craft engaged in the fishing business, and he was one of the first to put the idea to practical use. He had by this time started off by himself and his first craft was a small half-decked vessel, not much larger than the former man-powered fishing boats. She had a single cylinder gas engine, and from



Achille Paladini, who built a substantial fortune out of fish and workboats.

the first proved a marked success. Of course, this innovation was copied by others, but due to his faculty of handling men and business, Mr. Paladini was able to practically control the fishing industry of the port insofar as the retail markets were concerned. He did this mainly by his sterling honesty and square dealing with those he assisted. Many a good American citizen of Italian birth today has his home and enough comforts for declining years, who made his first start by being financed by Achille Paladini in the old days. Of course, Achille took his share. Who wouldn't? It was due him, for by his far-sightedness and industry was the business built up.

Later he established a fish marketing place on Clay street, near where the present warehouse is, and began to cater to the wholesale trade as represented by peddlers and hucksters. Hotels and steam-

ships were soon added to his list of buyers, and the business grew rapidly. Then came the building of larger and more powerful vessels. At that time the diesel was unknown, and the first fishing workboats were steam driven. The U. S. Grant was the first vessel of the fleet. She was fitted to do deep sea trawling and, like other ventures of Paladini, she made money. She was followed soon by the Alexander Volta, Henrietta, Paladini Brothers, Yolanda, and others. All of these did well, disaster overtaking but one, the Iolanda, which was lost off Pescadero Point in a heavy gale.

Soon the business expanded to such a degree that attention had to be given to the warehouse end.

The best and most economical of refrigerating plants was then installed, together with every facility for the proper handling and care of fish, sanitation and cleanliness as prime factors in the fish game being rigidly enforced.

To the sale of fresh fish has been added the marketing of mild cured fish. This meets with a heavy demand from the interior and Middle West, the total amount handled in a year mounting well into the millions—and all made possible by the workboat, for without her no such enormous amount of fish could be handled. After their capture the fish must be taken to the market promptly and there cooled and cleaned. Speed is necessary. Also power must be had to pull the immense trawls, that oftentimes come to the surface with tons of fish at one haul.

So the fish workboat came into existence. The steam-driven hulls are now rapidly being replaced by diesel-powered craft. The latest addition to the Paladini fleet is the Achille Paladini, named in honor of the founder of the company. The vessel is the pride of the fleet, as quoted by Alex. Paladini to a Pacific Marine Review representative. She handles well; is always ready; is most economical in fuel and upkeep costs; and shows the company in



Three of the Paladini fleet at one of the San Francisco piers. The Achille Paladini, shown in the center, is a new boat built by Anderson & Seimer and engined by the Enterprise Engine Company, San Francisco.

a most marked way the advantage of this type of engine. The firm has for many years operated steam craft, and is still operating several, but will, ere long, have all their vessels diesel-driven.

The active management of the business was controlled until his death by the late Achille Paladini and is now carried on by his four sons, whom, with their two sisters and a few old friends, form the close corporation of A. Paladini, Inc., specializing in the wholesale fish business. That the firm will continue to expand is not doubted. The increase of population means more buyers, and the stores of fish in the Pacific seems inexhaustible. Later there will be more and more diesel-driven craft flying the Paladini flag. All this means much to the business of the port of San Francisco and shows the part played in prosperity by the busy workboat.

LOWER SAN FRANCISCO BAY

Workboating in the Prune and Apricot Belt

DOWN among the prune and apricot orchards of Santa Clara County some fifty miles south from San Francisco are warehouses and wharves where workboats load and discharge varied cargoes. This is not known to many marine folks yet and there are also farmer people living near by who are only just now waking up to the fact that the workboat is a big factor in farming communities.

About two years ago the South Shore Port Company was organized at Mountain View, and the diesel-powered vessel Bay Shore was purchased, capacity around 250 tons. From the start it has made money for her operators. A visit to the company's wharves and warehouses was recently made by a Pacific Marine Review representative. He saw much freight being handled. Dry-goods, pipe, hardware, furniture, paints, and all sorts of merchandise coming in; canned fruit, dried fruit, butter and other farm products going out. A total of well over three thousand tons per month is handled, and the business still grows.

As all this has been made possible by one workboat, the company has determined to add to its fleet and has ordered another to be built,

the contract for the hull having been let to the A. W. de Young Boat & Shipbuilding Company, Alameda. She will be 106 feet over-all, 16 feet depth below upper deck, and 32 feet beam. The upper deck will be for shelter and living quarters only. The engines will be two sets of Atlas-Imperial diesels of 75 horsepower each. The cargo capacity will be about 300 tons.

The officers of the company and most of the stockholders are residents of Mountain View and vicinity. Seeing the need of such a system of transportation, they got together and first dredged a channel from the southernmost end of San Francisco Bay for a distance of ten thousand feet to a point about a mile from the city of Mountain View. This channel is one hundred and twenty feet in width, and has a good ten feet of water at any stage of tide. The offices, situated on the wharves, are commodious and business-like. There is a night and day service, as obviously much of the entering and leaving of the boats is controlled by the tides. Over twenty employes are engaged in the work and, owing to lack of transportation facilities, much business has to be turned down. For

this reason a new and larger workboat is to be put on the line.

The company will, at an early date, build concrete fire-proof warehouses over 300 feet long, and they also intend to construct concrete facings and curbing, with reinforced docks. At present there is ten feet of water at low tides, sufficient at any state of the tide for quite a husky vessel.

Agencies for the company are maintained at all important towns in the Santa Clara Valley, besides those at San Francisco and Oakland.

O. E. Smith is general manager of the company, and to his energy is due much of the success of the undertaking. This gentleman is thoroughly familiar with river and lake transportation, having been brought up on the shores of Lake Erie. He is also a firm believer in the diesel type of engine and the wonderful possibilities of this power when combined with sturdy workboats.

Walter Luhdorff, wharf superintendent, explained a great deal of the progress of the business. In addition to the water transportation there has been an arrangement provided for handling of the cargoes by land, delivering to all points in

the Santa Clara Valley and to the residences and business places of the patrons. To do this they maintain a fleet of heavy motor trucks, and these also have to be helped out by others. Local farmers come to the wharves and take delivery, too. An instance of this was the Shasta, a scow workboat, which was

discharging 200 tons of baled hay at the time of the writer's visit. This hay had been loaded at Stockton, and was to help out a short crop in Santa Clara Valley. So it will be seen that the workboat is a factor in farming and fruit growing.

It was also noticed that a trim yacht or two was at anchor in the

approaching channel, which looked odd to a seaman, as only a few rods away flourish the peaceful orchards and dairy farms, while the rattle of the tractors and plows mingled with the chug of hoists lifting sling loads of cargo in and out.

BUILDING AND HOISTING RUM CHASERS

THE A. W. de Young Boat & Shipbuilding Company, Alameda, has quite lately been before the public as the place where a fleet of ten rum runner chasers are being built. But the yard has a reputation besides this. For several years Mr. de Young operated a repair wharf and yard on the Oakland side of the estuary but getting more business the firm was forced to acquire new quarters.

The new yard is now at the foot of Chestnut street, Alameda, and has been active for the past seven months. During that time a great deal of new work has been finished and quite a number of contracts are under way. Primarily the ten U. S. Coast Guard rum runner chasers occupy the center of the picture. These craft have already been fully described in the pages of *Pacific Marine Review*, but the method of getting the frail but speedy boats into the water has not up to now been illustrated. Instead of the time honored launchings, these craft are transferred from ways to water by a method better called hoisting. This will be more clearly seen by the photograph herewith, kindly given by the management of the yard.

Besides the speedy fleet of chasers mentioned, a large snag boat is under construction for the U. S. Army Engineers. This heavy hull will be 166 feet over-all, 37 feet 8 inches beam, and 5 feet depth. She is of exceedingly massive construction. Heavy hog posts and derrick masts are being fitted, and she will be capable of pulling up from the river channels over one hundred tons of debris. The vessel will be propelled by a stern wheel, operated by the conventional type of engine. The boilers, though, are exceptionally large and heavy, to ensure plenty of steam for the operation of the many derricks and winches. Fine living quarters for the crew



Above is shown a busy scene at the Alameda yard of the A. W. de Young Boat and Shipbuilding Co., with four of the new Coast Guard boats well under way and the Havside Company's barge standing by ready to hoist. Below is shown one of the completed chasers suspended in the derrick sling ready to lower into the waters of the Oakland Estuary.

and officers will be provided, and a complete blacksmith and machine shop will be installed.

Besides the work above mentioned, a new workboat for the South Shore Port Co. is to be built. Comfortable quarters for four officers and ten men will be provided. Power will be two 90 horsepower Atlas-Imperial diesel engines which will give her a speed of over 9 knots when laden with about 400 tons of freight.

In addition to these jobs, there are two heavy barges under way at the yard, and the usual run of repair jobs. To handle these activities a force of about 125 men is kept employed. A. W. de Young is president-manager and is ably assisted by William Burns. Both these gentlemen are experienced builders, and all work turned out must be right. Thomas B. Foster is the naval architect of the yard, Joseph Harris is chief engineer and Robert J. O'Connor is purchasing agent. The personnel are all young men, but the high class of their product speaks well for their ability.



WESTERN-ENTERPRISE SPELLS PROGRESS

THE power plant in a workboat must be good, or the craft will be a failure. This is a well known law which admits of no evasion. A poor engine, be it steam, gas or crude oil, will ruin the operation of a boat, no matter how well built the hull may be. There are many engines manufactured and all have good points. But to produce in one unit as many of these points as possible is the aim of inventors and manufacturers. In the past few years attention of engine builders has been directed to diesel types, and already this machine has forged to the front rapidly and is daily being improved upon.

There has been considerable controversy as to the advantages and otherwise of the 2-cycle and 4-cycle. It is not the province of this article to take sides with advocates of either, but whether a 2-cycle or 4-cycle there is no question that the diesels as now built are pretty good machines and are fast displacing the steam plants of large as well as small vessels. But it might not be out of place to mention that among the several types now on the market the product of the newly merged Western-Enterprise, engine builders, has resulted in a combination of the same marked features of excellence as had been embodied in the product of the two individual companies.

A Pacific Marine Review representative lately took a look at the San Francisco plant of the Western Machinery Company. While this shop does not as yet equal the one in Los Angeles, it certainly turns out a splendid job. At the time of the visit a new 165 horsepower 4-cylinder was just being started on the test block. Without trouble or fuss it started up like an old hand, rolling over steadily and silently. The general construction of the engine showed a most sturdy ensemble. Metal has not been spared where needed, although there is nothing clumsy or uncouth about the appearance of the completed machine. The solid injection pump is rigidly made and should hold up well to its work. The forced lubrication system has also been thoughtfully worked out and is positive in its action, as are the cylinder oiling arrangements.

Work was going forward on a new main shaft being fitted into the bearings for another job. The shaft, like all others made by the Western-

Enterprise folks, was $\frac{1}{4}$ inch larger in diameter than called for by Lloyds. So far there has never been a failure of a shaft turned out. That infinite pains were being taken with the work was evident to the visitor, himself an old-time machinist. Accuracy was absolute, and nothing was allowed to go by that was in the least detail not up to standard.

Mr. J. P. Browner, sales engineer, pointed out the many important features of the engine, and as this gentleman was for many years chief engineer of ocean vessels his opinion is of weight. He is proud of the product that his firm is turning out, and justly so. Speaking of the future of the diesel, Mr. Browner believes that we have not as yet become fully alive to all the advantages of this prime mover.

Improvements will be evolved, and refinements made both towards cutting down costs of building and improving operation and lessening fuel consumption. While so far the firm has not built reversing diesels, the designers are at this time working on a system which it is believed will effect this in a better way than any hitherto evolved. However, this is not as yet far enough along to warrant description, but it is believed that in a few months an arrangement will be perfected to permit of rapid and absolute control of direction of rotation and speeds. At present the reversing gear made by

the company is of a most massive and rigid type, practically unbreakable, and so constructed as to permit of easy disassembling and adjustments for which, while not often needed, allowance is made.

At present the firm is building a 170 horsepower 6-cylinder engine to replace a compound steam engine of 150 horsepower which have been taken out of the yacht Imperial. The Imperial is a schooner-rigged vessel of 130 tons, owned by Willis Walker of the Red River Lumber Company. This gentleman, after looking at other machines, decided on an Enterprise for his auxiliary power. When the new engine is installed (the work is under way at the Crowley Yards), the Imperial will probably be considerably faster than before, as the weight of machinery will be less.

Besides this engine there are six others in different stages of completion on the floor of the shop, all of which are on order. The outlook for future business is bright, and as the field broadens no doubt the firm will get its share. Besides marine engines, a full line of stationary type is built, suitable for any or every condition where a heavy duty engine is needed, and ranging in power from 65 to 350. Should a customer wish larger and more powerful units, these can be designed and built along the same lines that feature the lesser sizes.

Keeping Rum Chasers Tight

THERE is nothing new or strange in the use of Jeffery's marine glue in deck seams of all types of craft whether it be a small pleasure boat or the great Leviathan, where over 16,000 pounds of Jeffery's marine glue were used. There are times, however, when the features surrounding a particular installation justify special mention, as appears in the case of the U. S. Coast Guard patrol boats.

Jeffery's marine glue was endorsed by the officials of the U. S. Coast Guard, the Committee on Purchases, and was the unqualified choice of the majority of the builders who finally received the contracts for construction. In addition to the use of Jeffery's marine glue in the deck seams, many of the builders have also used Jeffery's waterproof liquid

glue "C" quality for laying and attaching canvas to house tops and hatch covers. All of this glue was furnished by L. W. Ferdinand & Company of Boston, Massachusetts.

The contracts for these boats were placed in boat yards on the Atlantic and Pacific coasts, along the Gulf of Mexico, and the Great Lakes, and, when finished, will constitute the most unique fleet that has ever been commissioned.

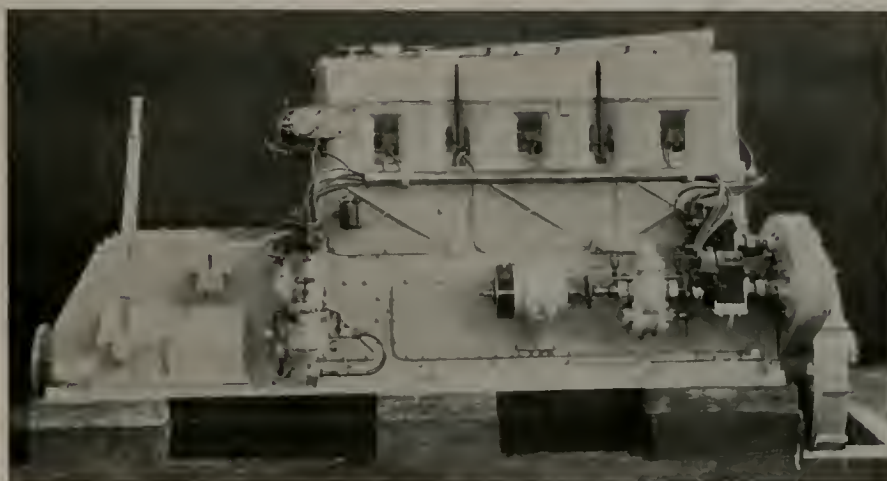
Not long ago a gasoline power boat was looked upon solely as pleasure craft. However, in a short span of years it has found a place in the field of commercial craft and now is to be commissioned as a unit in our national defense. We will look with pride and interest on the results.

LATEST WINTON MARINE GASOLINE MOTOR

THE supremacy of the Winton Engine Works in the building of the latest and most successful gasoline and diesel-type marine power plants is further proved by the new Winton Model 106. This is a 6-cylinder, 4-cycle, 7-inch bore, 8-inch stroke gasoline motor, which fills a long-felt want for a marine motor of this size that will stand up and give satisfying service under all kinds of conditions.

The announcement of this addition to the long list of successful Winton marine engines will come as welcome news to boat owners, designers, and architects who know the need for a marine engine of medium size that can be depended upon completely.

The Model 106 is clean, quiet, sturdy, unusually simple in construction, and shows throughout its design many desirable refinements and improvements which evidence the continued effort of its makers to stay in the forefront as the builders of the world's finest marine engines. The Model 106 is exceptionally powerful for its size, develop-



The new Winton Model 106 marine motor. A six-cylinder gasoline engine with 7-inch bore and 8-inch stroke, developing 250 horsepower at 1200 revolutions a minute.

ing 250 horsepower at 1200 revolutions a minute, and is heavy enough to insure utmost dependability. It is supplied in both port and starboard types, to facilitate operation in twin-screw installations.

One of the outstanding features of the engine is the over-sized crankshaft, 4 inches in diameter, which eliminates torsional vibration and provides large bearing sur-

faces for connecting rods and main bearings, reducing bearing pressures and increasing life of engine. The crankshaft is made of high-carbon steel and the entire shaft is machined and drilled from main bearings through cheeks and pins for lubrication. All bearings and pins are ground. Bearings are brass shells, lined with best high grade babbitt scraped to fit.

A BARGE SPECIALIST

IT has been said that a man who does one thing well becomes famous. While this may not mean that a man who builds lighters is to be known to the world as a genius, it will ensure him being known to those that use lighters. Such a man is C. L. Arques of Sausalito, California. He builds barges and lighters and makes a specialty of them. And barges and lighters are so closely allied to workboats that mention of the former in the Workboat Section of Pacific Marine Review would be in order.

The other day a Pacific Marine Review representative had occasion to visit Sausalito and noted a large lighter under construction at the Arques yard. A somewhat striking feature of the hull is the fact that there are no butts in its construction except at the ends. The knuckle piece is 108 feet long by 12 by 12 inches clear Oregon pine. The siding is same length, but 6 inches by 12 inches. Bottom and ends are 4 inches by 14 inches, 40 feet long, thus forming a very rigidly built structure. The cross keelsons are also continuous from side to side, and very heavily truss braced. Wa-

ter-tight fore and aft bulkheads, with others at each end, make a whole fabric that should stand up against almost any severe usage.

It is believed that this style of barge building can only be done on the Pacific Coast, as other parts of the world do not have the suitable timbers. Mr. Arques says that even here these extra long pieces are getting scarce, and ultimately they will have to be jointed to build barges of

the length mentioned. These hulls, in which Arques yard specializes, are used for derrick hoists, dredgers, molasses and other liquid carriers, stone and heavy freight traffic, etc. And not being self propelling, the workboat becomes a necessity. So the relationship between the two is obvious. The barge is dependent on the workboat; and the latter makes much money hauling her unwieldy sisters around the bay.

GAS OR OIL?

THE motor freighter Neptune of the Napa Transportation Company is a striking example of what a saving can be made by converting a boat from gas to oil power.

The Neptune, which is operated between San Francisco and Napa on a regular schedule, is 65 feet over-all with a beam of 26 feet on the water line, and carries 175 tons of freight when fully loaded.

The Neptune was formerly equipped with a 70 horsepower gas engine and made 7½ miles per hour. She now has a 60 horsepower Fair-

banks-Morse engine turning a special design Cloverleaf propeller, and makes 9 miles per hour.

The fuel bill was formerly about \$185 per month. With the "CO" engine she now averages \$30. It will readily be seen that in the course of operation in a year's time the fuel alone saved will amount to about \$1860.

Her owners state that in nine months' operation, with the new engine, they have not had any engine trouble. The experience of the Napa Transportation Company should interest gas boat owners.

NEW BOOKS AND TRADE LITERATURE

The Tale of Our Merchant Ships, by Charles E. Cartwright. 275 pages, bound in blue buckram with gold stampings, illustrated with numerous pen and ink sketches by the author; published by E. P. Dutton & Co., 681 Fifth avenue, New York. Price \$3 net.

From the days of sailers when the world was young to the American war emergency fleet and the trade ships of today is a long far cry. It is, however, covered in fifteen chapters of very readable, sketchy prose, interspersed with numerous and excellent pen and ink drawings and cuts with a wealth of detail and a sympathetic appreciation of the subject, which make this book very well worth while. The subject of the chapters relating to the development of British and colonial shipping in the sixteenth century and later, and especially relating to the mariners of Salem, is treated with a frankness and vigor and an honesty of purpose that is very refreshing. Thus we see it is not the noted clipper ship captains nor yet the buccaneers who are most prominently mentioned in tribute to the famous sea men of Salem, but the name of the bright particular star is Nathaniel Bowditch, who is described as having contributed more largely to the real history of navigation than probably any other American.

We recommend this book to all lovers of the sea for many quiet evenings of reading by the driftwood fire.

Fighting Ships of the World, edited by Oscar Park and Francis E. McMurtrie; published by D. Van Nostrand & Co., 8 Warren street, New York. Price \$12.50 anywhere in the United States.

This is the twenty-seventh annual edition of the standard work on the naval fleets of the world, formerly edited by Fred T. Jane. It contains complete information in tabulated form of the naval strength of all nations and pictures of typical ships with complete information as to construction, personnel, and ordnance. A very convenient section of this work contains silhouettes, by which the various types of ships can be recognized at sea. This section has been enlarged and improved in the new edition.

High Temperature Insulation; an excellent 12-page booklet on a highly important subject, the real infor-

mation on which is largely contained in ponderous volumes and only available by patient research. The booklet under review was compiled by the Celite Products Company of Chicago, largely as the subject matter for a lecture which was delivered by their engineers in a large number of technical schools during 1923. In its present form it is available to all engineers. It covers, in a condensed practical way, the factors affecting the quantity of heat lost through radiation, the conductivity of heat through walls, the advantages of insulating materials, and the methods of determining the rate at which heat is conducted through walls composed of two or more different materials. A number of practical examples of insulation are illustrated.

The Engineering Achievements of the Westinghouse Company During 1924, by H. W. Cope, assistant director of engineering.

This is a handsomely illustrated 50-page book, giving in considerable detail the work of the Westinghouse Electric & Manufacturing Company in various fields of electrical power, transportation, and marine engineering. Of particular interest to readers of *Pacific Marine Review* are the pages devoted to naval and merchant marine propulsion apparatus as developed by this company.

The 1924 record in these fields includes the United States battleship *Colorado*, with complete electrical equipment, including full electric propulsion machinery developing over 37,000 shaft horsepower and giving the ship a sea speed of better than 21 knots.

Four diesel-electric hopper dredges, a diesel-electric tanker finished and another well under way, a large diesel-electric tug for New York harbor, together with a number of diesel-electric yachts, including the large auxiliary schooner yacht *Cutty Sark*, combine to make a showing for this method of propulsion, covering a great variety of merchant marine types.

A considerable amount of work has been done in perfecting cargo handling equipment for ship use and a gratifying amount of interest on the part of steamship operators has been evidenced in electrical power for auxiliaries. One interesting application is a cargo hoist used on a coastwise passenger and freight liner, which is arranged in a man-

ner similar to an electrical elevator fitted with electrical motor, limiting switches and special control. Water-tight cargo handling machinery has also been installed on two other coastwise passenger steamers.

Passenger steamer owners are beginning to appreciate the benefits to over-all economy and to comfort of passengers that may be derived from substituting the electric motor for steam engine power in handling cargo.

Ingersoll-Rand Company has recently issued a very interesting booklet entitled "100 and 1 Ways to Save Money With Portable Air Power."

This booklet of 72 pages is a complete description of portable air compressors and the many air tools and labor aiding methods made possible by them, together with cost data comparing hand versus machine methods. There are over 100 illustrations showing various applications and a complete index. The book is of interest to practically every industry, especially in construction and repair work where air-operated tools are employed. Copies of this book may be obtained from the head office at 11 Broadway, New York, or from any of the branch offices.

Diehl Manufacturing Company, Elizabeth, New Jersey, has issued Bulletin No. 1650, dealing with motor-driven exhaust fans for direct current and for alternating current.

In this bulletin some of the various sizes and types of Diehl fans, direct coupled to Diehl totally enclosed motors, are illustrated and a few of their outstanding features are briefly described.

Busch-Sulzer Diesel Engines is the title of a very interesting booklet of 95 pages published by the Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, Missouri.

This book describes in a very brief and interesting manner the original, and from 1898 to 1911 the only, American manufacturer of diesel engines. It is profusely illustrated with tables, diagrams, half-tone reproductions of photographs of the Busch-Sulzer type diesel engine and installations for both marine and stationary use, also frontispiece photographs of Dr. Rudolph Diesel and Adolphus Busch.

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

THERE has been a steadily increasing interest in the adoption of the York-Antwerp Rules, 1924, both in this country and abroad, but commercial and underwriting bodies appear to be surprisingly shy when it comes to a definite approval. This is the harder to understand because the proposed alterations carry with them a standardizing of general average principles and practice based upon the very latest commercial developments of the age, and this is certainly something which every country desires.

To date, there has been definite approval of the new rules by the controlling underwriting bodies of France, as also by several shipping organizations of England, and, in a tentative way, by the Institute of London Underwriters. In the United States, underwriters have been hanging back until the several issues involved can be thoroughly discussed and their effect studied. The Institute of Marine Underwriters has taken the matter up, but it passes into the committee stage, which always means further delay. The United States Shipowners Association has gone on record in approval and has urged the United States Chamber of Commerce to move for the adoption of the 1924 rules. This association invited the marine underwriters to join them in their appeal to the Chamber, but the latter decided to bide their time until they could go into the subject more thoroughly.

At the recent fiftieth anniversary meeting of the International Union of Marine Insurance, held at Baden-Baden, Germany, where representatives were present from almost every European nation with the important exceptions of France and England, the York-Antwerp Rules, 1924, came up for discussion, but when all was said and done it still remained an open question as to what position the Union will finally take. In com-

mittee the opinion was expressed that the revised rules, compared with the statutory law of certain countries, contain some provisions which will be disadvantageous to underwriters. It was admitted, on the other hand, that unification of general average law is of the greatest importance for all marine insurance articles on account of the international legal uniformity thereby attained. But as some of the most experienced specialists in the assembly expressed fears that the new rules would lead to an extended application of the principle of general average in practice, instead of its gradual abolition, or at least its limitation, this being considered as in the interest of underwriters, and as it appeared from the lively debate which followed that a strong general interest existed for a thorough discussion of the Stockholm proposition, it was agreed to have the matter further examined with in the circles of the Union and to communicate on it with outside underwriters.

It seems that at this meeting of the Union the subject of the treatment of general average deposits occupied a major part of the attention. It will be recalled that under the new revision Rule XXIII provides that where cash deposits have been collected in respect of cargo's liability for general average, such deposits shall be paid into a special account, earning interest where possible, in the joint names of two trustees in a bank approved by such trustees. This is, of course, a marked advance on the usual practice in some countries where the owner or his agent has the disposal of the deposits. Nevertheless, the general meeting did not consider this rule as completely satisfactory because the principle of reciprocity has not been taken into account, which would have led the Stockholm conference to the result that the shipowner, in

case he is debtor to the general average community, has likewise to deposit a security. Attention was called to the agreement made by the Underwriters' Association of Amsterdam with certain large Dutch shipping lines, and it was felt that those terms are eminently exemplary. The Union proposes to use its efforts to have similar agreements adopted in other countries.

Warehouse Clause Criticized

The recently revised English warehouse-to-warehouse clause continues to occupy a place of interest in underwriting deliberations. The American Institute of Marine Underwriters passed it along to a committee for consideration and the committee, of which William H. McGee was chairman, reported adversely to any decision being made at this time. Evidently our underwriters want to see how their British brethren fare at the hands of this revision before committing themselves. This was another subject that came up before the recent meeting of the International Union of Marine Insurance at Baden-Baden, where it received a lively discussion. In accordance with this clause, warehousing risks in the port of discharge are limited to a certain period, even in the case of mixed sea and land risks. A further cover is only granted at a premium to be arranged, and only in cases where the circumstances leading to a loss were beyond the control of the assured. The assembly did not overlook the fact that the additional premium provided for in the clause would, as a rule, be only obtainable in case of loss, and would, therefore, in many cases not be a real compensation for the risks undertaken. For this reason the Union refrained for the time being from recommending this clause to continental underwriters, and contented itself with gathering information with the object of composing a wording pos-

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sessing the clearness of the English clause as regards the limits of liability and at the same time insuring the underwriter against non-payment of the additional premium.

Shipments in Customs

If there is one clause more than another which marine underwriters desire to have severely let alone, it is the River Platte clause. Any weakening of this principle is enough to instantly bring them to their feet. It has, therefore, been rather exciting in underwriting circles since the Buenos Aires branch of the First National Bank of Boston recently put forward a circular suggesting a change in proceedings in Argentina in view of the new attitude of that government in the matter of shipments in customs. It is required by the Argentine law that all importations by water must be declared by the consignee, or other holder of the bill of lading and consular invoice, within eight days of the vessel's arrival. Failure to declare within this period is penalized by a fine of 2 per cent on the customs valuation of the goods. In the absence of documents, the consignee has been permitted to make a provisional declaration, good for thirty days, thus avoiding the fine if the documents arrive within that period. Furthermore, if the merchandise was badly needed, it could, until recently, be cleared by means of a bank guarantee to produce the documents or to protect the government from any loss.

In April of this year, by governmental decree, both privileges were cancelled. Representations were at once made by United States and British commercial attaches, with the result that there was an extension until October 10, 1924, of the period during which provisional declaration might be made, but there was no change in the decree prohibiting withdrawal of merchandise against bank guarantee. This meant that after that date if goods arrived

without the accompanying documents a fine of 2 per cent of the customs valuation of the merchandise would be applied unless declaration is made within eight days of the vessel's arrival. However, the Argentine government has submitted to its Congress a proposal to extend the term for the first declaration from eight days to fifteen, so that more time might be allowed for the arrival of the documents. At present, sight drafts are commonly paid on the day the vessel carrying the merchandise is said to "mature"; that is, eight days after the arrival; and many time drafts are not accepted until that day. Thus, should the proposed law go into effect, foreign shippers are likely to lose an additional week's interest upon their drafts, as well as run the risk of having their goods uninsured for a few days while still technically in their possession.

The effect upon insurance is important. More than 80 per cent of the marine insurance certificates accompanying shipping documents to Argentina carry the River Platte clause, which reads: "Risk hereunder shall cease upon arrival at any shed (transit or otherwise), store, custom house or warehouse, or upon expiry of ten days subsequent to landing, whichever shall first occur." Under this clause merchandise always loses marine insurance protection ten days after landing, and sometimes sooner, although temporary discharge into lighters is not considered as a landing, if the goods are still in "due course of transit," and not delayed for the convenience of the consignee. Drawees generally object to paying for fire insurance placed by the bank holding the documents before the ship has "matured", and that will continue if the new law goes into effect and the bank, to protect the shipper's interest, takes out fire insurance before the fifteenth day. The bankers, therefore, are urging that shippers be

prepared to calculate the additional interest in their prices, and also to see that their insurance protects them against all contingencies.

To this attitude of the banks American marine underwriters take serious exception. They see in it an attempt of the former to dodge their obligations and escape a proper and appropriate business expense by passing the buck to the underwriters. Says a prominent New York marine leader: "The banks can protect themselves against the hazards indicated in the circular, under floating forms of policy, at a moderate cost, with American, British, Argentine and other companies doing business in Buenos Aires. The bank's circular, however, makes it clear that, as the bankers cannot find a simple way to pass on this charge to their own customers, they are endeavoring to get insurance companies to supply them free of charge with the insurance they require. Why should not the bank bear such an expense arising in the regular course of its own business? Why should it seek to pass its own expenses on to somebody else? Why should it seek to get insurance protection without cost to itself?"

"All Risks" Coverage

Increasing discussion attends the writing of the "all risks" cover—a form of protection always asked for by the hungry broker and much disliked by the underwriter because of its breadth and its inadequacy of rate. Some of the older and more conservative offices are exerting steady pressure towards the doing away with this form altogether, but the newer and more anxious underwriting firms are granting it freely as an inducement for new accounts to come their way.

In this connection it is interesting marine insurers greatly to penetrate the purpose back of a request that has just been issued by Insurance Superintendent James A. Beha of New York for more information

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CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

from underwriters and brokers with respect to prevailing practice in "all risks" insurance of personal property under floater forms. All companies licensed to write fire and marine business in New York were served with the following notice:

"Kindly furnish this department with a complete list of the various kinds of personal property 'floater' or 'all risk' policies issued under whatsoever name by your company or through its agents, together with specimen policies of all such forms, as well as specimen forms of all riders or endorsements used in connection with the same."

Putting two and two together, the underwriters have come to the conclusion that somebody has been overstepping the mark in the employment of this form, and that it is the intention of the department to move for an amendment of the governing law so as either to allow all offices to write it or else to have it legally prohibited. There appears to be an inclination on the part of certain underwriters to strike a compromise by limiting the exposure to all risks "of transportation."

The "all risks" cover has been in use for more than a quarter century. It is credited with an English origin, and was first employed for specie. Flour was admitted to this comprehensive protection in due time, and is generally so written to this day. As we have above stated, the brokers are now asking for it on everything they offer, and they usually get it. Obviously, the difficulty of arriving at an adequate rate is great, and this phase of the situation has developed into a guessing match in most of the offices. The important elements are the nature of the commodity, the voyage contemplated, and the port of destination. Certain goods may, of course, be written "all risks" without any occasion for anxiety on the underwriter's part; such, for ex-

ample, as machinery. Most bulk cargoes have difficulty in getting such a cover. Refined oil, gasoline, etc., are sometimes so written, but too often with the result of serious claims, particularly from vessels equipped for oil burning, when the fuel oil leaks and contaminates the refined product and so entails the cost of re-refinement. There is a serious difference of opinion as between insurance offices as to just what an "all risks" cover includes. Some accept it as meaning just what it says, and therefore never raise any question over claims. Others maintain that theft and pilferage, for instance, are not included, and that unless these hazards are expressly named in the application they are to be excluded. In the judgment of the best conducted offices, this form ought to be refused and the insured compelled to revert to the more scientific average clauses.

Changes in Port Risk Clause

An amendment has been devised and brought into effect by the Institute of London Underwriters in its standard port clauses so as to define more clearly the risks excluded by warranty "A". The amended clause now reads as follows, the portions in black face comprising the changes:

"Warranted free from any claim arising directly or indirectly under workmen's compensation or employers' liability acts, and any other statutory or common law liability in respect of accidents to or illness of workmen, or any other person employed in any capacity whatsoever by the assured or others in, on or about or in connection with the insured ship or her cargo, material, or repairs."

News in Eastern Offices

S. D. McComb, manager of the Marine Office of America, returned from six weeks in Europe on December 1.

The great fire at the Erie Rail-

road's Jersey City pier, in November, entailed considerable loss upon marine underwriters, the precise amount of which cannot be determined until the Westbound cargo claims have been adjudicated. More than \$200,000 of insurance loss was resultant from the damage or destruction of fourteen barges and lighters, several of which were new. The entire property loss is estimated at \$2,000,000. The merchandise at risk was Westbound package freight imported for interior shipment. Under the warehouse-to-warehouse clause, marine underwriters would be liable for loss or damage to cargo from an inbound ship which had been discharged and transferred to the Erie freight sheds for forwarding to interior points.

In the big blaze at the Sinclair Refining Company's docks at Linden, New Jersey, in November, marine insurers caught another heavy loss. Cargo valued at \$100,000 was destroyed, as also a tanker, a barge and a tug. The insurance on the tanker may reach as high as \$500,000, and it is a constructive total loss. This was, until shortly before the fire, insured in the American Marine Insurance Syndicates, but the London market got the business by cutting the rate, and now they will have to pay the bill.

Prizes in the marine junior course of the Insurance Institute of America have been awarded to the following contestants, the first prize being \$25, the second \$15, and the third \$10: J. W. Sargent of the Insurance Company of North America; S. Gore of Johnson & Higgins; and W. J. Falb of the Atlantic Mutual.

John Ferguson, marine manager of the American Foreign Insurance Association, returned home, late in November, from his extended trip of more than ten months around the world in the interests of the association. He appointed agents at im-

portant points, and secured much valuable first-hand information as to conditions at ports where most of the marine business is transacted.

Construction is under way for a fine seven-story home office building

at 11 South William street, New York, to be occupied entirely by William H. McGee & Company, Inc. This prominent firm has been located in its present neighborhood for more than forty years.

Captain George Anderson, a prominent marine surveyor at Hongkong, has been appointed surveyor at that port for the American Bureau of Shipping.

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Freights and Charters

December 17, 1924.

SINCE our last report dated November 19, we have only one wheat charter to report from the North Pacific: namely, the France Maru, Columbia River to the United Kingdom and Continent, Nov.-Dec. loading, by Strauss & Co.

Owing to the present scarcity of tonnage available for Dec.-Jan.-Feb. loading, the lumber rates to Japan, Australia and U. S. Atlantic have made a substantial advance over a short period of two weeks. We have fixtures to report to Japan at \$9.50 for Jan. and \$10 for Feb.-Mar., when only a short time ago space was prevalent on the liners at \$8. The Japan market will probably range from \$10 to \$11 for some weeks, depending on the period of time that elapses before tonnage returns from other trades to the Pacific.

Charterers were securing ample tonnage for Australia from \$10.25 to \$11, but at present tonnage will not offer in this direction and we believe charterers will pay \$12 or more for Jan.-Feb.-Mar. steamers.

U. S. Atlantic rates have advanced and charterers are now bidding \$15 for Jan., early Feb. tonnage.

Fixtures for lumber to Australia are as follows: Norwegian stmr. Horda, North Pacific to Melbourne, \$11, Jan. loading, by J. J. Moore & Co.; Japanese stmr. Tomi Maru, Coos Bay and Columbia River to Australia, Dec. loading, terms and charterers not stated.

The following steamers have been reported fixed for lumber to the Orient: Italian stmr. Kobe, \$24,000 lump sum, prompt loading, by H. R. MacMillan Export Lumber Co.; Japanese stmr. Shankai Maru, \$9.50, Jan., and a Japanese stmr., \$10, Jan. loading.

For lumber to the Atlantic seaboard the following fixtures are reported: American stmr. J. R. Gordon, British Columbia to North of Hatteras, \$12.50, Nov.-Dec. loading, by South Alberta Lumber Co.; Norwegian stmr. Tatjana, British Columbia to North of Hatteras, Dec. loading, same charterers; American stmr. Romagne, Columbia River to New York and Philadelphia, \$13.50,

prompt loading, same charterers; American stmr. Herman Frascch, British Columbia to New York, Dec. loading.

The following steamers have been reported as taken on time charter: British stmr. Rio Blanco, delivery North of Hatteras, redelivery Port Sudan via North Pacific, \$1.10, Dec. loading, by H. R. MacMillan; American stmr. Doylestown, one round trip voyage, Gulf-Pacific trade, by Swayne & Hoyt, terms private; American stmr. Cadaretta, same; Norwegian stmr. Hanna Nielsen, delivery Colon, 12 months, \$1.05, Jan., by C. K. West & Co.; Japanese stmr. Katsura Maru, delivery Japan, 6 months, 80 cents, Dec., same charterers; Norwegian stmr. Capto, North of Hatteras to North Pacific and return, \$1.10, Dec., H. R. MacMillan Export Co.; Norwegian stmr. Dagfred, delivery Colon, redelivery North Pacific, 12 months, \$1.10, Feb.-Mar.; German stmr. Fingal, delivery North Pacific, redelivery Australia, one voyage, 4/3, Jan., by J. J. Moore & Co.

The following tanker fixtures have been reported: American tanker K. R. Kingsbury, California to New York, 73 cents, crude, Dec.; American tanker Agwimars, California to North of Hatteras, 72½ cents, Dec.; American tanker Agwiworld, same; Japanese tanker Tachibana Maru, 6 months' time charter, Pacific trading, \$1.50 per d. w. t. per month, by Anglo Saxon Pet. Co. of London.

American stmr. Thomas Crowley is reported sold by Thomas Crowley to A. F. Mahony; concrete tanker Palo Alto from U. S. Shipping Board to Oliver J. Olson; British barkentine Lord Templeton, Eschen & Minor to Jas. Griffiths & Sons; American stmr. Glacier, Union Construction Co. to Union Fish Co.

Panaman m.s. Monterey is reported fixed for lumber from Puget Sound to Suva by J. E. Davenport; American stmr. El Cicuta, British Columbia to Galveston, lumber, \$14, charterers not named; French schr. Ralta, Puget Sound to Papeete, lumber, by Paul I. Fagan & Co., terms private.

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SHIPBUILDING AND

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NEW STEAMSHIP SERVICE TO FLORIDA

THE sailing of the Clyde liner Apache from New York with 200 passengers for Miami marks a new epoch in the maritime history of Florida. Her departure is the inauguration of the first passenger service between New York City and Miami.

The Miami Chamber of Commerce has endeavored for years to deepen the channel sufficiently to care for vessels of the size of the Apache, but it was not until a few months ago that the dredging was completed by the United States Army Engineers. Weekly service will be maintained by the Apache and the Arapahoe, both vessels having just left the Hoboken plant of the Todd Shipyards Corporation, where extensive improvements were made.

Each vessel has now accommodations to carry 200 passengers. New staterooms with two beds and private baths have been built, as well as inside and outside staterooms on both the lower and upper promenade decks. Larger rooms to accommodate three and four passengers have also been provided. There is space for between 75 and 100 automobiles on each vessel. No crating or hoisting of cars is necessary. Cars can be driven on to the vessel from the dock and off again as soon as the destination of the passenger is reached. A stop at Charleston, South Carolina, will be made on the south-bound voyage, and coming north the liners will stop at Jacksonville.

The cargo capacities of the Apache and Arapahoe are about 3000 tons each, permitting large quantities of fruit being carried on the north-bound run. The latest type of ventilation equipment has been installed to insure uniform temperature in the spaces provided for perishable shipments.

YOUNG BROTHERS COMPANY ORDER TUG

A contract for a 120-foot ocean-going tug to be equipped with two 300-horsepower 2-cycle 6-cylinder direct reversible air starting Fairbanks-Morse full diesel cylinder engines, was recently awarded to the Ballard Marine Railway Company of Seattle by Young Brothers, Ltd., of Honolulu.

The contract is the first for an ocean-going tug awarded to Seattle



in twelve years and is the first such contract ever received here from overseas interests. L. H. Coolidge, Seattle naval architect, who designed the vessel, will supervise her construction.

The tug to be built by the Ballard yard will handle the towing company's contract with Libby, McNeil & Libby. With a length of 120 feet the vessel will have a beam of 24 feet 7 inches and a molded depth of 14 feet 1½ inches. All her deck equipment will be electrically driven. The hull will be built of Douglas fir and will be of heavy construction. The auxiliaries will include a 45-horsepower semi-diesel for generating the electricity to be used in operating the deck equipment, and an oil engine of 7½ horsepower, which will operate the electric light generator. Quarters will be provided for twelve men. The plans are so arranged that one can go from bow to stern without going out on the exposed deck.

The tail shafts will be of hammered steel, 6½ inches in diameter, fitted with bronze sleeves and copper jackets between bearings. The struts will be of manganese bronze, lignum vitae bushed. Four-bladed Coolidge propellers will be installed of bronze and with a diameter of 74 inches.

The vessel will have a fuel capacity of 2400 gallons, giving a cruising radius of 7500 miles. Her speed is to be 11½ knots. Besides being the first ocean-going tug built in Seattle in twelve years and first vessel of that type ordered from this port by overseas interests, the new towboat will rank as the first twin-screw diesel towboat ever built in Seattle. She will cost \$130,000 or more.

ARC WELDED BARGE

A ONE-PIECE steel tanker barge, welded throughout by the electric arc, was recently launched at Providence, Rhode Island. This barge, built by the Saxe Providence Boiler Works, will be used by the Pennsylvania Petroleum Products Company for transporting oil between Fall River, Providence, and New Bedford. It is the first electrically all-welded barge of its kind constructed in this country.

The tanker is built around two cylindrical oil tanks 8 feet in diameter and 67 feet long, each having a capacity of 26,000 gallons. The barge is 76 feet long, 21 feet wide, and 11 feet deep, barge and tanks having a total weight of 70 tons. The barge is divided into four compartments with three water-tight bulkheads. Oil will also be carried in the two middle sections of the hull around the outside of the tanks. The end sections will be reserved as bulkheads containing air for buoyancy purposes.

The barge was entirely constructed by the electric arc welding method, using three General Electric welding equipments. One was used for tacking with a fitting-up crew and the other two for welding. The largest number of men used at any one time was six. The builder estimates that, were the barge constructed in the ordinary riveting manner, a force of eighteen men would have been required. A further comparison, based on a record of costs, shows that, excluding the costs common to both methods, two electrically welded barges could have been built for the price of one riveted barge.

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Recent Contracts

William Cramp & Sons Ship & Engine Building Company, Philadelphia, has been awarded the contract for the construction of the express passenger liner for the Matson Navigation Company and American-Hawaiian Steamship Company. The contract price as made public by the Shipping Board is \$6,500,000. A complete description of the specifications of this vessel will be found on another page of this issue of Pacific Marine Review.

A. W. de Young Boat & Shipbuilding Company, Alameda, California, has laid the keel and erected frames for a bay freighter for the South Shore Port Company, 105 feet long, 32 feet 8 inches beam, and 7 feet 8

IN PACIFIC COAST SHIPYARDS

**SHIP REPAIRING
SHIP BUILDING
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inches depth, to be propelled by two 90-horsepower Atlas-Imperial diesel engines. Contract price is \$39,950.

J. C. Johnson, Port Blakely, Washington, has an order for two trap scows for the Sunny Point Packing Company; the scows to be 60 by 18 feet by 4 feet 3 inches.

American Bridge Company, Pittsburgh, has an order for one acid tank barge for the Carnegie Steel Company for delivery next summer. The barge will be 175 feet long, 26 feet beam, 11 feet depth.

The American Ship Building Company, Cleveland, has signed a contract with the Bradley Transportation Company to build the largest self-unloading ore carrier ever built. The boat will be 624 feet long, 64 feet beam, 22 feet draft, with a capacity of 13,000 tons of ore. The vessel will be of turbo-electric drive, with General Electric motors developing 3000 shaft horsepower, steam for the turbines being furnished by three Foster steam generating units. The vessel will cost over \$1,500,000; keel will be laid immediately; delivery date will be the early fall.

Federal Shipbuilding Company, Kearny, New Jersey, has a contract for a barge for the Pan-American Petroleum Company, 150 L. B. P. by 30 beam by 10 loaded draft.

Great Lakes Engineering Works, River Rouge, Michigan, has signed a contract with the Wilson Transit Company for the construction of a bulk freighter 580 L. B. P., 60 beam, 20 loaded draft, for delivery next June. The vessel will have triple expansion engines developing 2000 indicated horsepower, which will

drive the vessel at a speed of 12 miles. The deadweight capacity of the freighter will be 12,000 tons.

Dravo Contracting Company, Pittsburgh, have an order for 22 steel barges for the Mississippi River Commission, 120 by 30 by 7 feet 6 inches; 6 steel barges for J. E. Davison & Brothers, Pittsburgh.

Midland Barge Company, Midland, Pennsylvania, has an order from the Barrett Line, Cincinnati, for six steel flush deck barges, 225 feet long, 36 feet beam, 8 feet depth, 1500 deadweight tons.

Keel-layings

Hawaiian Standard, diesel-electric tanker, Standard Oil Company, by Bethlehem Shipbuilding Corporation, Union Plant, Nov. 1.

Amelie, cannery tender, P. E. Harris & Co., Seattle, by J. C. Johnson, Port Blakely, Wn., Nov. 3.

Deck barge, Nashville Bridge Co., Dec. 1.

Norfolk, dredge hull, Atlantic Gulf & Pacific Co., by Newport News Shipbuilding Co., Nov. 19.

Launchings

New Orleans, ferry steamer, Richmond-San Francisco Transp. Co., by Bethlehem, Union Plant, Dec. 10.

Steel dump scow, Arundel Corporation, by Bethlehem, Sparrows Point Plant, Nov. 19.

Gleniffer, bulk freighter, Great Lakes Transp. Co., by Midland Shipbuilding Co., Midland, Ont., Nov. 18.

Oil barge, Standard Oil Co. of Ohio, by Marietta Manufacturing Co., Dec. 10.

Deck barge, builder's account,



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Nashville Bridge Co., Nov. 1; ferry-boat, Bisso Ferry Co., Nov. 20.

Nenemooska, yacht, Alfred I. du Pont, by Newport News Shipbuilding Co., Nov. 22.

Two maneuver boats, U. S. Engineers, Huntington, by Chas. Ward Engineering Works, Nov. 22 and 25.

Deliveries

Hawaii, cargo steamer, Hawaiian Meat Co., by Bethlehem Shipbuilding Corp., Union Plant, Oct. 30; El Paso, ferry steamer to Richmond & San Francisco Transp. Co., Dec. 5.

Car transfer barge to Missouri Illinois Railroad Co., by American Bridge Co., Dec. 8; also three barges to Carnegie Steel Co.

Carfloat, Erie Railroad, by Bethlehem, Harlan Plant, Nov. 3; carfloat to Bush Terminal, Nov. 15.

Three C. G. patrol boats (4 in all) to U. S. Coast Guard, by Defoe Boat & Motor Works, during November.

George Washington, combination steamer, to Old Dominion S. S. Co., by Newport News Shipbuilding Co., Nov. 15.

Repair Awards

Todd Dry Docks, Inc., Seattle, on a bid of approximately \$200,000, was awarded contract for the reconditioning of the Admiral Oriental liner President McKinley on December 17. This is the first of this fleet of five "535's" to be reconditioned.

* * *

Bethlehem Shipbuilding Corporation, Union Plant, recently repaired the Argonaut Line freighter Santa Cecilia on a bid of \$128,000 and 32 days. The work was actually performed in 24 days. Other bids submitted were: Hanlon Drydock Co., \$137,922, and Moore Dry Dock Co., \$132,378. The Santa Cecilia was damaged in a collision with the steamer Washington of the Mexican Free Ports Commission off Point Montara during November.

* * *

Moore Dry Dock Company was awarded contract for repairs to the bow of the steamer Washington. Bid submitted was for \$18,495 and 16 days or \$21,291 on an overtime basis.

Other bids submitted were: Bethlehem Shipbuilding Corp., \$18,850 and 20 days; General Engineering

Co., \$24,250, 29 days, or \$25,250 and 18 days; Hanlon Drydock Co., \$30,850 and 16 days, or \$33,500 and 12 days.

Shipyard Notes

Lake Washington Shipyards, Seattle, have an order for 12 scows, including two large derrick scows for the Alaska packing and cannery interests.

The Emergency Fleet Corporation is suing the Skinner & Eddy Corporation, Seattle, who held contracts for war-time ship construction, for \$7,530,432.08. The bulk of the money asked, according to government officials, was turned over by the government to the shipbuilding company as advance payments on ships which were never built, the contracts being cancelled.

* * *

James Griffiths & Sons, Seattle, recently purchased the steel bark Lord Templeton and will convert her into an ore barge.

* * *

A marine railway capable of handling the repair work of all steamers on the Sacramento and San Joaquin rivers is to be built on Banner Island, Stockton, California, by the California Navigation & Improvement Co. The plant will be the most complete of its kind on the coast.

Two large river steamers, the Delta King and the Delta Queen, the steel hulls of which have been brought to this country in sections from Scotland, are being assembled by the California Transportation Company at Stockton. The two boats will be 287 feet over-all and 58 feet beam, and will have cargo capacity of 800 tons. They will be stern wheelers, steam propelled type.

* * *

Plans and specifications for the new 1200-foot repair and outfitting pier at the Puget Sound Navy Station, Bremerton, Washington, were received from Washington recently. Bids for construction of the pier will be received at the Naval Station until February 4, 1925.

* * *

According to reports, the government dredge Chinook has been transferred from Norfolk to the first New

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York district and will undergo extensive betterments to cost about \$200,000. Alterations will include the removal of two 20-inch pumps to be replaced by 30-inch pumps and the replacing of Scotch marine boilers with Babcock & Wilcox boilers.

* * *

W. F. Stone & Son Shipbuilding Co., Oakland, is building a combination towboat and cannery tender for the Naknek Packing Company. She will be 70 feet long, 18 feet beam, and 7.6 depth, and be powered with triple expansion steam engines.

* * *

The new London Ship & Engine Building Co., Groton, Connecticut, plans constructing a fabricating shop enabling it to enter business of hull construction. This company is reported to have closed a contract with the Peruvian government for the construction of two submarines.



• • •

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 draft, about 18 mi. speed, 100 HP; 4
 steam, 4 col. T. engine, 24" 1111" 4
 1 beam 13 keel Mast 74, lance el. Sept
 4, 1901.

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hewac, Tutunck, Swallow, Inouens, Pawtucket
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LUBRICATION ON SHIPBOARD

An Open Forum—Questions on Lubrication Problems Are Invited; They Will Be Answered in Order of Receipt

INSTALLMENT No. 7

This page, Lubrication on Shipboard, prepared through cooperation of Associated Oil Company's staff of lubricating engineers, is attracting favorable mention of many of our readers, and, as will be observed, a number of practical questions are being sent in for solution.

Question No. 31.—Is there any difference between automobile oil and diesel engine oils?

Answer.—Automobile engine and diesel engines belong in the same family and call for oil of similar specifications. Of course, different weights and viscosities are necessary to meet different operating conditions, different methods of application and different lubricating systems, but a good internal combustion oil should possess such a viscosity and setting point that it can be distributed effectively and surely to all part of the engine. In cold weather the oil must remain fluid and under severe heat conditions it must retain its body to form the necessary film between the frictional surfaces and to form a piston seal. Low setting point oils are particularly desirable in semi-force feed and in full and semi-splash systems, as during cold mornings and in starting up with a stiff cold oil, which congeals badly, much trouble is experienced. After the engine has cooled down over night or during a lay-up, an oil with a high cold test will become very thick and gummy, and it is often very difficult to turn the engine over.

The temperature of cylinder walls of water-jacketed engines varies from 250 to 360 degrees Fahrenheit. This temperature permits the lubricating oil to remain on the cylinder walls and pistons and to provide an oil film, but the inner surfaces of the oil are subjected to the intense heat of the combustion of gases and are therefore burned away.

Some oils burn and pass off in the form of smoke and leave little or no carbon behind. Other oils deposit much free carbon which as it accumulates causes trouble. Naphthenic and asphaltic base oils deposit soft sooty carbon. Paraffine base oils produce hard brittle carbon.

A real comparison of diesel and automobile engines can hardly be drawn owing to the difference in construction, methods of lubrication, and the service which the different engines perform, but it is a point to remember that pale colored oil invariably form less carbon than dark heavy oils containing aromatic cylinder stocks.

Any good internal combustion oil should separate readily from water, have a flash of 350 degrees Fahrenheit, or more, be free from acid, and of the proper viscosity recommended by the manufacturer of the engine to be lubricated. Reliable engineering service is furnished without cost by all the well-known and reliable oil firms.

Question No. 32.—In overhauling an engine after several months of continuous operation, we found the oil grooves full of black charred metallic substance and the surface of the main journals looked streaked with bright highly polished babbitt in some places and dark spots in others. The bearings have all been hot on different occasions, but nothing has burned up and we have never had to shut down. Would you blame the lubricating oil for the condition named?

Answer.—Considering your statement that you have had no shut-downs during the long period of operation, it would be unfair to feel right with your lubricating oil. From the condition named, it would seem that the bearings have all worn at some time or other and the metallic substance is from this source. Frequent lifting of the caps for examination is strongly recommended as the best assurance to prevent such conditions. You might disconnect the discharge side of your water service, if the bottom half of the journal is protected with a jacket, and see if the circulation is free. Salt, rust and foreign matter often stop up the flow and cause the bearings to heat up. The dark and light spots on

the surface of the babbitt would seem to indicate different kinds of metal. The very best of babbitt metal is composed of tin, antimony, and copper. Inferior babbitts have many other metals incorporated and are not advisable to use, especially on marine jobs. Even with the best of metal, skill is required to pour good box. If the metal is not agitated constantly, the different metals having different specific gravities will arrange themselves in layers and the first journal poured will contain the lightest metal and be different from the last one, which will obviously contain all the heaviest metal. Some journals will be too soft, some too hard, or others will contain streaks of both hard and soft metal, which will all operate against perfect lubrication.

Poorly treated lubricating oils which are purchased on a price basis only (the cheapest get the business plan) often are responsible for a lot of trouble. Free sulphuric acid in lubricating oil will attack the zinc frequently used in the babbitt and decompose it by chemical action. This leaves the softest metal to carry the load, resulting in rapid wear, slack bearings, and the production of metallic sediment to plug up oil grooves.

The location and construction of oil grooves also has an influence on the condition of your bearings and the distribution of lubricating oil. The human equation is, after all, the deciding factor in the last analysis, and it all depends upon your oilers and engineers to obtain results from your lubricating oil.

Question No. 33.—What kind of an oil do you recommend for application to commutators on dynamos?

Answer.—Oil should never be applied to a commutator except with the finger-tip moistened with a little light dynamo oil. Vaseline is often used for this purpose and a paraffine candle provides a safe and reliable form of lubrication for a commutator.

Question No. 34.—Is the ordinary boiler oil used aboard ship the natural crude oil that comes from the ground, or has it been worked over?

Answer.—Practically all fuel oils have been "cracked" to obtain the gasoline contents and lubricating distillates before being sold as fuel oil. Some crudes do not contain enough volatile matter to make it profitable to distill same, therefore they are sold as fuel.

Question No. 35.—What is meant by a filtered stock?

Answer.—The name implies the method of manufacture. The oil in question is filtered through a mass of Fuller's earth or some like substance, which extracts solid matter and color pigments. Filtered oils represent a high grade of treatment.

Question No. 36.—What is shale oil and how is it extracted?

Answer.—Shale oil is a hydrocarbon oil obtained from mineral shale by the process of distillation. Naphtha, kerosene, fuel oil, and lubricating oil are all obtainable from shale. Practically an inexhaustible supply of oil shale, which is dark gray or black mineral, is found in the world and it represents a supply of oils for the future should our present supply of oil crudes be exhausted.

Shale oils are inclined to gum and are rarely used alone, being compounded with fish or animal oil to add to its oiliness. It is expensive to produce under the present methods and is not a competitor for our present lubricating oils either in price or quality.

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

1925 EXPOSITION

THE American Marine Association, composed of many of the leading ship owners, operators, ship builders, engineering, industrial and commercial organizations recently organized its exhibition committee to originate plans for its 1925 Marine Show to be held the first week in December at the Armory, Lexington avenue and Twenty-fifth street, New York.

It was stated by Edward Colson before resigning the chairmanship of the exhibits committee that in previous years the Marine Association began its activities too late to plan all the intricate details. Therefore, under the instigation of Frank J. Shipman, president of the American Marine Association, the plans are now being evolved for the 1925 show and which will be submitted to members of the association.

This will make it quite possible for the prospective exhibitors to develop models (apparatus), publications, advertising and sales effort to synchronize during the marine exhibition. The exhibits are expected to cover all phases of the marine industry from shipbuilding and operation to a display of apparatus and materials for all branches of the Navy, Coast Guard, Signal Corps, ship yards and the great variety of ships from sea-going yachts and fishing schooners to the great ocean liners and naval vessels. Peter A. Sensenig of the Westinghouse Electric & Manufacturing Company was elected chairman of the exhibits committee for the 1925 show.

* * *

LEGISLATION

The Carriage of Goods by Sea Bill, which was passed by the British some time ago, has also been passed by both houses of the Australian parliament and will probably go into operation on January 1, 1925, the same date as the British act.

NAME CHANGED

The name of the Sandusky Foundry & Machine Company, Sandusky, Ohio, has been changed to the Paper & Textile Machinery Company, that the name may more nearly reflect the company's product. No change in ownership, management or policies has been or will be made.

* * *

MOTOR LINERS

Two large motor liners to be fitted with double-acting diesel engines of the 4-cycle type have been ordered from Harland & Wolff, Belfast, by the British & African Steam Navigation Company. Three similar vessels are already under construction at Belfast, two for the Royal Mail Steam Packet Company, and one for the Union Castle Line.

* * *

SUBSIDIES

Shipping and shipbuilding subsidies are under discussion in Japan as the new fiscal year approaches. It has been intimated that the subsidies to steamship lines will be reduced in some cases and cancelled in others. If this proves true some will have to discontinue operations or will be forced to borrow to pay dividends. Shipowners have appealed to the government for bounties for new construction. The government in reply has criticised shipowners for buying so many old, inefficient steamers.

* * *

OLD NAME AGAIN

By an act of July 11, 1924, the name of the Norwegian capital will be changed from Kristiania to Oslo, which is the old name of the town.

* * *

GRAIN FIRM

J. A. Pease has filed articles of incorporation for the Pease Grain Company, Seattle, to engage in the business of buying and exporting grain; capital stock, \$100,000.

REFRIGERATION

R. H. Weaver of New York announced in San Francisco recently that he and associates were ready to finance a line of refrigerator ships to operate between California and the East Coast for the carriage of perishable fruits and vegetables. He said the company would have a capital stock of \$15,000,000, entirely financed within their own group. Weaver has spent many weeks in California studying the fruit shipping situation. He stated that negotiations are under way for the purchase of three Shipping Board vessels and three other vessels of proper size and speed will be built for the proposed service.

* * *

NEW BODY

Steamship and railroad passenger men of Seattle recently organized the Passenger Men's Association. Nearly 100 passenger traffic men were present at the first meeting. The object of the organization is to promote cooperation between the rail and water lines.

* * *

CHANGES CAREER

A. P. Taylor, after a quarter of a century of service on the staff of the Honolulu Advertiser, has resigned, and is now archivist of the territorial government archives of Hawaii. During his many years of service on the Advertiser, Taylor served principally as shipping and marine editor. He has met most all of the captains and pursers of vessels that have called at Honolulu, as well as distinguished men and women from all parts of the world who have passed through Honolulu. Taylor has always been deeply interested in Hawaiian history and ancient customs and wrote many interesting articles for his paper.

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SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.
(See page 16)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.
(See page 22)

DOLLAR STEAMSHIP LINE

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Phone Garfield 4300.

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(See page 18)

GARLAND STEAMSHIP CORP.

General Steamship Corp., agents.
240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between San Francisco, Seattle, and Los Angeles and Norfolk, Baltimore, and Philadelphia.

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Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.
(See page 22)

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

SAILINGS—Gull.

Every 31 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.
(See page 20)

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Kearny 5100.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York and Baltimore and Los Angeles, San Francisco,

Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.
(See page 16)

PACIFIC MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 23 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, Baltimore and New York. Westward calls: New York, Baltimore, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 7 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.
(See page 18)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.
(See page 15)

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Passenger Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.
(See page 20 for sailing schedule)

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,
311 California street. Phone Garfield 6760.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.

230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

A. F. Zipl, Pacific Coast manager.

110 California street. Phone Douglas 1670.

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SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

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FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.
(See page 16)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

BERRY E. DUNN & COMPANY, headquarters, Balfour building, San Francisco, announces the installation of refrigeration equipment in the Matson liner Mauna Ala. The installation consists of two Brunswick-Kroeschell steam-driven ammonia compressors, each with an 8-ton capacity. A Brunswick-Kroeschell ammonia compressor is being installed on the Standard Oil tanker Hawaiian Service, under construction at the Union plant of the Bethlehem Shipbuilding Corporation. Berry E. Dunn & Company have also placed Brunswick-Kroeschell plants on Keith Spalding's yacht Goodwill at the Craig Shipyard, Long Beach, and on the American-Hawaiian steamer Kentuckian. The Dunn organization, also Pacific Coast representatives of the Kearfott Engineering Company, Inc., have orders for Lockwood-Carlisle piston rings for several Standard Oil tankers.

* * *

ASSOCIATED OIL

The Associated Oil Company has been awarded the contract by the Navy Department of Supplies and Accounts to supply Pacific Coast and Hawaiian ports with approximately two-thirds of their lubricating oil requirements for the fiscal year 1925. This contract includes engine and aviation oils as well as turbine lubrication oils.

* * *

JAPANESE LINES

It is reported that the Osaka Shosen Kaisha will within the next few months absorb the Toyo Kisen Kaisha, now operating passenger and freight vessels between Pacific Coast ports and Japan. The Nippon Yusen Kaisha has also been reported as contemplating the purchase of the T. K. K., but according to K. Ohashi, Tacoma passenger agent of the Osaka Shosen Kaisha, his line is the most favored for the acquisition of the T. K. K.



McCormick S.S. Company

Pacific Coastwise and Intercoastal Service



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Largest
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Coastwise
Fleet



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STEAMSHIP CO.**
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Our extensive shipping interests and facilities make it possible for us to offer to the lumber trade an unexcelled service.



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Chas. R. McCormick & Co.

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AMERICAN-HAWAIIAN STEAMSHIP COMPANY

General Offices:

215 MARKET ST.

SAN FRANCISCO

CALIFORNIA

INTERCOASTAL

SAILINGS—Every 10 days between Seattle, Portland, San Francisco and Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me. (See page 22)

DOLLAR STEAMSHIP LINE

Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk. (See page 18)

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Seattle, San Francisco, Los Angeles and Norfolk, Baltimore, and Philadelphia.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston. (See page 22)

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 21 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile. (See page 20)

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Baltimore, San Diego, Los Angeles, San Francisco, Portland, Tacoma and Seattle; monthly to Jacksonville, Fla. (See page 16)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4 Central. Phone Elliott 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. (See page 25)

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger Office, 619 Second avenue.
Pacific Steamship Company, agents.
L. C. Smith Building. Phone Elliott 2068.
SAILINGS—Intercoastal.

Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma. (See page 20 for sailing schedule)

TRANSMARINE LINES

Transmarine Corporation.
4421 White Building. Phone Elliott 6127.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.
Arctic Club Building.
FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane street terminal. Phone Elliott 6657.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston. (See page 16)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me. (See page 22)

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Sailings between Los Angeles, San Francisco, Seattle, Vancouver, B. C., New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me. (See page 18)

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
541 South Spring street.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Seattle, San Francisco and Los Angeles and Norfolk, Baltimore and Philadelphia.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston. (See page 22)

LUCKENBACH LINES

Luckenbach Steamship Company.
208 West Eighth street. Phone Main 808.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 21 days from Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile. (See page 20)

MUNSON-McCORMICK LINE

McCormick Steamship Company.
Lane Mortgage Bldg. Phone Metropolitan 6140.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York and Baltimore and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla. (See page 16)

PACIFIC MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.
Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.

Every 23 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, Baltimore and New York. Westward calls: New York, Baltimore, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Los Angeles and San Francisco.

SAILINGS—Direct Freight Service.

Every 7 days. Eastward calls: San Francisco, Los Angeles, Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle. (See page 18)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
703 Transportation Bldg. Phone V. And. ke 4659.
FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. (See page 25)

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company.

OLSON PURCHASE

The concrete tanker Palo Alto, built on San Francisco Bay during the war, was recently sold to Oliver J. Olson of San Francisco. It is not known what Olson intends to do with the vessel, but it is believed that he has purchased her for the main machinery, which is still intact.

* * *

CARGO PACT

Plans are being perfected at Vancouver, B. C., whereby the longshoremen of that port and the steamship owners and operators will sign a five-year agreement on wages and conditions covering the handling of cargo to and from the ships. Previous agreements have all been for only one year.

* * *

RADIO WORK

The National Electrical School of Los Angeles has been awarded contract for the installation of radio equipment of the United States Naval Station NPX at Inglewood. The school recently installed facilities for training in ship and shore radio operation covering every operation of arc, spark and tube installation, obtaining their equipment from the Federal Telegraph Company of San Francisco.

* * *

ABERDEEN OFFICES

The Lumber Transport Company of Grays Harbor has opened offices at Aberdeen in order to render better service to carriers and shippers of lumber cargoes.

* * *

NAME CHANGED

The lumber steamer Thomas Crowley has been sold to Andrew F. Mahony, who has given the Nettleton Lumber Company, which has operated the ship for several years, the honor of renaming her. The steamer will be named the Jane Nettleton in honor of the daughter of W. B. Nettleton, president of the lumber company.

* * *

DIESEL PRACTICE

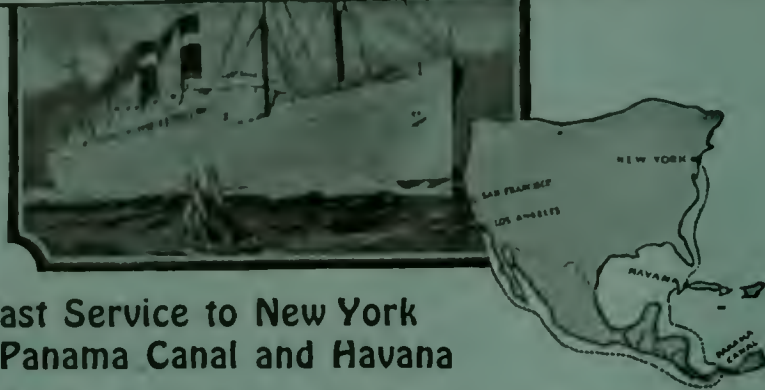
A series of fifteen lectures on the subject of the theoretical and practical side of diesel engines, conducted by Professor Educk under the auspices of the University of California Extension Division, is being given at the headquarters of the Marine Engineers' Association, 105 Market street, San Francisco. Another course later on will deal with oil burning aboard ships.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.
Transportation Bldg. Phone 821-336.
FREIGHT ONLY.

THE NEW WAY EAST



Fast Service to New York via Panama Canal and Havana

Regular Dependable Coast to Coast Passenger and Freight Service
New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, Tacoma

WESTBOUND

	From New York, Pier 61, N. River
MANCHURIA	Dec. 24
KROONLAND	Jan. 8
FINLAND	Jan. 22
MANCHURIA	Feb. 12
MONGOLIA	Feb. 26

EASTBOUND

	From San Francisco, Pier 22—Los Angeles Har.
MANCHURIA	Jan. 17.....Jan. 19
KROONLAND	Jan. 31.....Feb. 2
FINLAND	Feb. 14.....Feb. 16
MANCHURIA	Mar. 7.....Mar. 9
MONGOLIA	Mar. 21.....Mar. 23

Direct connections at New York and thru Bills of lading issued via: American Line to HAMBURG. Red Star line to ANTWERP.
Atlantic Transport Line to LONDON. White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

PANAMA PACIFIC LINE

INTERNATIONAL MERCANTILE MARINE COMPANY

Passenger Offices:

L. E. ARCHER—Pacific Coast Manager

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460 Market St.

SEATTLE
619 Second Ave.

LOS ANGELES
510 South Spring St.

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60 California St 322 Citizens National Bank L. C. Smith Bldg. Admiral Line Terminal

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San Francisco Office

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Telephone: Sutter 3414

INTERCOASTAL

322 Citizens National Bank.
Passenger Offices: 510 So. Spring st. Phone 877-511.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma. (See page 20 for sailing schedule)

TRANSMARINE LINES

(Transmarine Corporation.)

G. T. Darragh, agent.

A. G. Bartlett Bldg. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.

407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.

Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.

Railway Exchange Building.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston. (See page 16)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me. (See page 22)

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston. (See page 22)

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.

Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 21 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile. (See page 20)

MUNSON-McCORMICK LINE

McCormick Steamship Company.

181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York and Baltimore and Los Angeles, San Francisco, Portland and Seattle; monthly to Jacksonville, Fla. (See page 16)

PACIFIC MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.

Yeon Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 7 days. Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland, and Seattle. (See page 18)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

1008 Spalding Building.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. (See page 25)

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Pacific Steamship Company, freight agents.

Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma. (See page 20)

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 2377.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me. (See page 22)

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Halifax. Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.

402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me. (See page 18)

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.

602 Hastings street, West. Phone Seymour 2377.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston. (See page 22)

LUCKENBACH LINES

Empire Shipping Company, Ltd.

Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 21 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Galveston, New Orleans and Mobile. (See page 20)

MUNSON-McCORMICK LINE

Kingsley Navigation Company, Ltd.

413 Pacific Building. Phone Seymour 9506.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Baltimore, San Diego, Los Angeles, San Francisco and North Pacific Coast ports. (See page 16)

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports, San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports. (See page 25)

STEVEDORING

Bids for the stevedoring of all Shipping Board vessels at San Francisco and San Pedro will be opened at Washington, D. C., on February 15. The time specified is for one year. While not definitely known, it is thought that some Eastern stevedoring firms are expecting to bid on the work, hoping to land the contract as an opening wedge to actively enter business on the Pacific Coast. This might result in some of the managing operators of California losing out on this work for the first time. The Shipping Board work in San Francisco is divided into two groups, one covering the ships of the passenger fleet operated by the Pacific Mail Steamship Company, and the other covering the Board's freighters operated out of this port. The Board will have control of hours, wages, and working conditions of the men; other regulatory powers are to be retained by the Board, which is said by some to make the contract less desirable to some of the larger private stevedores, who are not bidding for the work.

* * *

FREIGHT LINE

The California State Board of Harbor Commissioners have granted a certificate to E. V. Rideout to operate freight vessels on San Francisco Bay between San Francisco and Mare Island Navy Yard.

* * *

PORTLAND CARGOES

The Portland Stevedoring Company has been awarded the contract for stevedoring all Shipping Board vessels at Portland during 1925. Bids will also be taken shortly on stevedoring at Coos Bay and Astoria, Oregon.

* * *

U. S. S. B. REPORT

During the fiscal year ended June 30, 1924, the United States Shipping Board sold fifty-three vessels, including barges, for which the government received a total of \$7,045,459.59, according to the annual report just issued by the board. The total deadweight tonnage of the vessels sold amounted to 389,919, and the gross tonnage totaled 299,819. The list includes the seven combination steamers sold to the Dollar Steamship Company, for which the Shipping Board is to receive \$550,000 each; and the City of Los Angeles to the Los Angeles Steamship Company for \$100,000.

NORTON, LILLY & COMPANY

GENERAL AGENTS, PACIFIC COAST

ISTHMIAN STEAMSHIP LINES (Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transhipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR (Pacific-Mediterranean Service)

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NORTON, LILLY & COMPANY, Agents, Portland, Seattle, Los Angeles and San Diego

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KEARNY 112
SUTTER 2525
SUTTER 4566

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and at
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Power Schooner
"ADVENTURESS" 15
Power Schooner
"GRACIE" 5 1/2
Sailing Schooner
"AMERICA" 11

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IN FOG—BLOW FOUR WHISTLES
WHEN CLEAR—BURN BLUE LIGHT ON JACK AT FORECAST

ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.

(Operating U. S. S. B. vessels.)

112 Market street. Phone Sutter 7640.

FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

(See page 25)

CALIFORNIA ORIENT LINE

Pacific Mail Steamship Co., managing operators.

508 California street. Phone Sutter 3800.

(Operating U. S. S. B. vessels.)

PASSENGERS AND FREIGHT.

SAILINGS—Trans-Pacific Service.

Every 14 days from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—Hongkong-India (Freight Only.) Connection at Hongkong every 2 weeks for India ports.

(See page 24 for sailing schedule)

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.

Robert Dollar Building, 311 California street. Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Fortnightly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

(See page 18)

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

(See page 20)

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OSAKA SHOEN KAISHA

McCormick, McPherson & Lapham.

503 Market street. Phone Kearny 2632.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

ROOSEVELT-KOKUSAI LINE

General Steamship Corporation, agents.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—At frequent intervals from San Francisco and Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

549-51 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.

222 Robert Dollar Bldg. Phone Garfield 3899.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Operating U. S. S. B. vessels.

Admiral Oriental Line, agents.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

(See page 24)

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.

Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

American Bank Building. Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

(See page 20)

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOEN KAISHA

W. C. Dawson & Company, agents.

Mutual Life Building. Phone Elliott 0842.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los An-

DIXON ACTIVE

Captain Andrew Dixon, formerly with the shipping firm of Struthers & Dixon, has again become actively engaged in the shipping business in San Francisco, being now connected with L. M. Bertaud and J. P. Barnacle in the newly organized Terminal Stevedoring Company.

* * *

NEW BUSINESS

Cousins Launch & Lighter Company has applied to the California State Railroad Commission for a certificate to operate five freight and passenger vessels between Eureka and points on Humboldt Bay.

* * *

L. A. HARBOR

The harbor commissioners of Los Angeles recently reorganized the engineering staff and has made two new appointments. Major-General Lansing H. Beach, retired United States Army engineer, has accepted the position of consulting engineer at a salary of \$1000 a month, his term of employment under this agreement to end July 1, 1925. The position of chief engineer of the harbor will be filled by George F. Nicholson, who has resigned his position as chief engineer and executive secretary of the Port of Seattle on July 1 to take up his new duties at Los Angeles harbor. Nicholson has held various engineering positions at northwest ports since 1909; from 1912 to 1916 he was engineer of the Port of Seattle in charge of outside construction of harbor terminal facilities; and from 1916 to date he was chief engineer and executive secretary of the Port of Seattle. His salary from the Los Angeles harbor commissioners will be \$10,000 a year.

* * *

U. S. S. B. LINE

The Admiral Oriental Line has been appointed agent in the Orient for the consolidated service of the Shipping Board from the North Atlantic and the Gulf of Mexico to the Far East. The Shipping Board service is a consolidation of the Barber Lines and the Tampa Inter-Ocean Company. Formerly the Admiral Oriental Line was agent for the Barber Line in the Far East and the Tampa Inter-Ocean Company was represented by the Pacific Mail Steamship Company. The name given to the consolidated service is the American Pioneer Line, operated by the Atlantic, Gulf & Oriental Steamship Company, in which both lines are interested. The Inter-Island Steam Navigation Company has been given the Honolulu agency for the amalgamated service.

United States Government Combination Freight and Passenger Services From Pacific Ports

American Oriental Mail Line

Trans Pacific Service from Seattle to
Yokohama, Kobe, Shanghai, Hong Kong, Manila.

A sailing every twelve days by one of the five great ships

PRESIDENT JACKSON

PRESIDENT JEFFERSON

PRESIDENT MADISON

PRESIDENT GRANT

PRESIDENT McKINLEY

Fastest Service across the Pacific from the United States

Direct Freighter Service

from Everett, Tacoma, Vancouver and Seattle
to Japan, Shanghai, Dairen, Taku Bar and Tientsin

Two sailings a month

Also regular sailings direct to
Foochow, Amoy, Swatow, Cebu and Iloilo

Operated by

ADMIRAL ORIENTAL LINE

409 L. C. SMITH BLDG.

SEATTLE, WASH.

California Orient Line

Trans Pacific Service from San Francisco to
Honolulu, Yokohama, Kobe, Shanghai, Hong Kong, Manila

A sailing every fourteen days by one of the great President ships

PRESIDENT PIERCE

PRESIDENT TAFT

PRESIDENT WILSON

PRESIDENT LINCOLN

PRESIDENT CLEVELAND

United States Government vessels, oil burning, 535 feet long, 21,000 displacement tons.

Operated by

PACIFIC MAIL S. S. CO.

508 CALIFORNIA STREET

SAN FRANCISCO, CALIF.

United States Shipping Board Fleet Corporation

ORIENTAL

geles and San Francisco, thence to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.
(See page 25)

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone Broadway 7900
and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Fortnightly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

(See page 18)

OSAKA SHOSEN KAISHA

McCormick, McPherson & Lapham, agents.
Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

ROOSEVELT-KOKUSAI LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—At frequent intervals from San Francisco and Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal

PORTLAND

AMERICAN ORIENTAL SERVICE

A. M. Gillespie, Inc., agent.

Board of Trade Bldg. Phone Broadway 4348.

SAILINGS—Monthly to ports of Japan and China as inducements offer.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

702 Wilcox Building. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

(See page 20)

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)

Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen.

Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila.
(See page 25)

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.
Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

PORTLAND-ORIENT LINE

Wallen & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

203-4 Wilcox Building. Phone Bdwy. 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

HEADS TRADERS

E. W. Wilson, president of the Pacific National Bank, San Francisco, has been elected president of the Foreign Trade Club for 1925. Wilson is closely in touch with foreign affairs. W. A. Hague, Leonard B. Gary and A. G. Caldwell were chosen vice-presidents.

* * *

BUYS NEWPORT

John W. Chapman of San Francisco has purchased the Pacific Mail vessel Newport. The Newport is of 1653 tons. She is 326 long, 38 2 beam and 23.9 draft. Under the Pacific Mail flag she was in the San Francisco-Panama run.



Coaling the Penang.

McBRIDE HONORED

Thomas C. McBride, Philadelphia manager of the Worthington Pump & Machinery Corporation, has received the Edward Longstreth medal of the Franklin Institute, in recognition of his invention of the Worthington locomotive feed-water heater. McBride has been experimenting with locomotive feed-water heating since 1903. He has served many years with the famous Worthington organization.

* * *

NEW FERRIES

The new Southern Pacific ferry El Paso recently underwent trials on San Francisco Bay and now is ready for automobile service between San Francisco and Richmond. The steamer cost \$500,000 and is 246 feet long, with 63 feet beam. The new steamers New Orleans and Klamath will join the El Paso in the San Francisco-Richmond run.

JOHNSON LINE

DIRECT FREIGHT AND PASSENGER SERVICE
TO AND FROM

PACIFIC COAST PORTS --- SCANDINAVIAN PORTS

Hamburg and Other European Ports as Inducements Offer

THROUGH BILLS LADING ISSUED TO ALL SCANDINAVIAN, FINNISH & BALTIC PORTS

MONTHLY SAILINGS

VESSELS CALL AT ANTWERP OUTWARD FROM EUROPE

GRACE LINE

EXPRESS FREIGHT AND PASSENGER SERVICE TO AND FROM

WEST COAST SOUTH AMERICA

Los Angeles--San Francisco--Puget Sound--British Columbia---*Monthly Sailings*

FOR RATES, FREIGHT SPACE AND OTHER INFORMATION, APPLY —

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General Agents Pacific Coast
332 PINE STREET :: SAN FRANCISCO

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M. F. & H. R. McLAURIN, Agts.
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PORTLAND
LIDELL & CLARKE

SEATTLE
W. R. GRACE & CO., Agts.
Hoge Bldg.

VANCOUVER, B. C.
C. GARDNER JOHNSON, Agt.

\$1200 *First Class* \$1200

ROUND THE WORLD

SAN FRANCISCO (or LOS ANGELES, PORTLAND OR SEATTLE), HONOLULU, SAMOA, SYDNEY, AUSTRALIA, JAVA, SINGAPORE, PENANG, COLOMBO, SUEZ, PT. SAID, ALEXANDRIA, NAPLES, GENOA, MARSEILLES, (LONDON \$35.00 Extra Rail), NEW YORK and Choice of Railways Across U. S. Stop-overs.

Oceanic S. S. Co.'s sailings: Ventura, April 8; Soerabaya, May 6; Ventura June 10, July 8, August 12, etc. Transshipping at Sydney to favorite Java ports to Singapore; from Singapore splendid Government built steamers of Dollar Line to Marseilles or New York. \$140 extra via Panama Canal.
Standard Service Throughout

Honolulu, \$220 Round Trip, First Class
Sydney and Return, \$565

Book Now!

OCEANIC STEAMSHIP CO.

2 PINE STREET SAN FRANCISCO

Canadian-Australasian Royal Mail Line

TO
Honolulu, T. H. Suva, Fiji
New Zealand Australia

The Large and Modern Steamers
R. M. S. NIAGARA R. M. S. MAKURA
20,000 Tons Dis. 13,500 Tons Dis.

Sail from VANCOUVER, B. C.,
every 28 days

Cargo Service

Monthly sailings from Vancouver to main New Zealand ports, also to Sydney, Melbourne and Adelaide, Australia, are maintained by the following up-to-date cargo steamers:
M. S. HAURAKI S. S. WAIOTAPU
S. S. WAIKAWA S. S. WAIHOMO

For Fares, Rates and Sailings apply to
any office of the

CANADIAN PACIFIC RAILWAY CO. and
all RAILWAY AND STEAMSHIP AGENTS

OR TO
**CANADIAN - AUSTRALASIAN
ROYAL MAIL LINE**

741 Hastings St., West VANCOUVER, B. C.

UNITED KINGDOM--CONTINENTAL EUROPE

SEATTLE

SAILINGS—Regular service, Pacific Coast ports, direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.
(See page 18)

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Service between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.
(See page 22)

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, sub-agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

Furness, Withy & Company, Ltd.
Furness (Pacific), Ltd.
710 Balfour Building. Phone Sutter 6478-6479.
PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
(See page 26)

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.
SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
351 California street. Phone Sutter 6427.
FREIGHT ONLY.
SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, agents.
260 California street. Phone Douglas 8040-1-2.
FREIGHT ONLY.
SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.
(See page 22)

JOHNSON LINE

W. R. Grace & Co., general agents.
332 Pine street. Phone Sutter 3700.
PASSENGERS AND FREIGHT.
SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)
401 Market street. Phone Douglas 7510.
PASSENGERS AND FREIGHT.
SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.
(See page 26)

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.
FREIGHT ONLY.
SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORT MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.
SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.
(See page 22)

UNITED AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.
For passengers, Phone Sutter 46.
PASSENGERS AND FREIGHT.
SAILINGS—North Pacific-European Service. Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.
Stuart Building. Phone Elliott 0147.
PASSENGERS AND FREIGHT.
SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

BLUE STAR LINE

Admiral Oriental Line, agents.
L. C. Smith Bldg. Phone Elliott 0974.
REFRIGERATOR AND GENERAL CARGO.
SAILINGS—Every 21 days from Vancouver, Seattle, Portland, San Francisco to Glasgow, Liverpool, Southampton, and London.
(See page 24)

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.
823 Alaska Building. Phone Elliott 9104.
PASSENGERS AND FREIGHT.
SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.
(See page 18)

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.
SAILINGS—Service between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.
(See page 22)

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.
SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)
Furness (Pacific), Ltd.
Burchard & Fisker, agents, 705 Arctic Bldg.
PASSENGERS AND FREIGHT.
SAILINGS—Fortnightly from Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports as inducements offer.
(See page 26)

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.
SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
Stuart Building. Phone Elliott 1464.
FREIGHT ONLY.
SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco and Los Angeles to United Kingdom. From August to December, sailings every 2 weeks.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.
SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.
(See page 22)

JOHNSON LINE

W. R. Grace & Company.
Hoge Building. Phone Elliott 5412.
PASSENGERS AND FREIGHT.
SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)
204 206 Rainier Building. Phone Elliott 4944.
PASSENGERS AND FREIGHT.
SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.
(See page 26)

SOCIETE GENERALE DE TRANSPORT MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SILK HANDLING

A study made by the Seattle office of the Fleet Corporation, over a period of eighteen months, of the actual time required to bring silk from Yokohama to New York via Shipping Board vessels, shows that from Yokohama to Seattle the best time was made by the steamer President Grant, Voyage 58, 8 days, 23 hours, 10 minutes. Average time for first six months of 1924 was 9 days, 20 hours, 7 minutes. This is all based on calendar time. Seattle to Chicago, best time 60 hours, 40 minutes, made by Northern Pacific in connection with the C. M. & St. P. on silk from the President McKinley, Voyage 66. The average calendar time Seattle to Chicago this year was 68 hours, 41 minutes, while for 1923 average was 74 hours, 42 minutes. Chicago to New York, best time 22 hours, 25 minutes, made by N. T. C. on silk from the President McKinley, Voyage 66. Average for 1923, 29 hours, 18 minutes, while for the first six months of 1924, 25 hours, 35 minutes. At transfers, average time for 1924, 6 hours, 50 minutes; for 1923, 10 hours, 59 minutes. Through calendar time, Yokohama to New York, best was 13 days, 4 hours, 50 minutes on silk from the President Jackson, Voyage 60; average time for first six months this year, 14 days, 2 hours, 35 minutes; while for 1923 the average was 11 days, 9 hours, 59 minutes.

* * *

NEW OFFICES

The New York Harbor Dry Dock Company, Inc., announces the removal of their New York offices from 32 Pearl street to the Whitehall building, 17 Battery Place. The plant and yard is at Clifton, Staten Island.

* * *

LUBRICATION

The McCord Radiator & Manufacturing Co. has just had issued a booklet describing the part lubrication plays in the dependable operation of heavy machinery, such as steam shovels, cranes, dredges, hoisting engines, and coal and ore handling apparatus. This booklet points out that continuity of service, reduced maintenance costs, and satisfactory operation of equipment are due to efficient lubrication. The publication is known as the Class BA Catalog and contains a detailed description of their Class BA force feed lubricator with illustrations and price lists. Copies may be had by addressing the McCord Radiator & Manufacturing Company, Lubricator Division, 2587 East Grand boulevard, Detroit, Michigan.



HAWAII

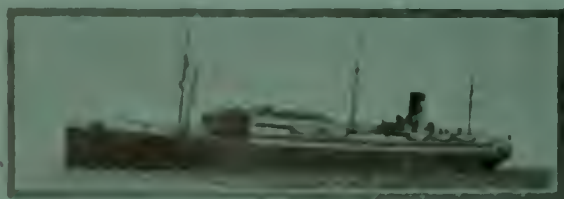
Where Life Is Restful

"Suave is the only adjective that fits life in Honolulu completely," writes Clayton Hamilton in *Vogue*. "Recalling the sonnets of Petrarch, I should prefer to write the word in its Italian form—soave—so that it would breathe with the soft whisper of a little breeze at twilight.

"Soave fits the air of Honolulu, which feels like velvet to the cheek; it fits the water of Waikiki, which feels like velvet to the limbs; it fits the people of Hawaii, who meet you and greet you with a gentle cordiality.

"And in after years, wherever you may be, there will come moments . . . when your soul will turn homeward to the Happy Isles, like the flowers that you strewed upon the sea."

Visit HAWAII this winter, and tour the Happy Isles the MATSON way! Matson Line inclusive (all-expense) 21 day tours to Hawaii, with eight days in the Islands, cost from \$267 to \$381, each person. Hawaii is the year-round playground of the Pacific.



MATSON

Navigation Company
225 Market Street, San Francisco

(MAIL THIS COUPON TODAY)

Send me your booklet "Delightful Days on Matson Ships", and "The All-inclusive Matson Voyages and Inclusive" (all-expense) tours to the Islands.

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Address _____

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The
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Coastwise Service
YALE and
HARVARD
of course!

Between **San Francisco**
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R. E. FORD, sales manager of Cadwallader-Gibson Company, Inc., Fifth and Brannan streets, San Francisco, has just distributed to the trade the following very interesting definition of "Bagac" timber:

"What is BAGAC?" is a question that is frequently asked and frequently answered, but, for the benefit of those of our friends who may not perhaps be sufficiently acquainted with the merits of this wood to accord it due appreciation, we think it desirable, in the interest of consumers, to amplify the reply in this instance and recount, briefly, what is already a matter of common knowledge to many of the most prominent representatives of the trade.

Bagac is a wood which grows from 100 to 120 feet in height before it commences to spread itself. When it begins to throw out branches at its extreme height, its growing activities may be considered to be completed. This is somewhat unusual in the growth of hardwoods for, as a rule, the out-branching occurs much nearer the base; in fact, in the matter of its growth, Bagac may be likened to the fir tree, which, as is generally known, drops its branches, with the result that knots and other defects are conspicuously absent, even as in Bagac.

The habit and growth of Bagac are worthy of comment. This timber, as is well known to botanists, is produced at extreme heights—in many cases at an altitude of as much as 5000 feet above the sea level, and when it is remembered that the higher the elevation of its place of origin, the greater the strength of the wood, an idea can be readily formed of the remarkable strength of Bagac.

In the Northern Philippine Islands, where Bagac flourishes, the value of the material is so generally recognized that a keen demand exists for this valuable wood; so much it is appreciated that local competition is on an ever-growing scale, and the more generally known the product becomes, the greater becomes its popularity among importers and consumers.

The chief emphasis must be laid on the fact that a practical experience of the wood is its best recommendation, and those who have handled Bagac are in agreement as to its merits. It is especially adapted for shipbuilding purposes, by reason of its length, 30 to 40-foot timbers being easily procurable. It is also especially adapted for body building, wagon work, etc., on account of its superior strength.

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"Berkshire"	Merchants & Miners Trans. Co.	Federal Shipbuilding Co.
"City of Chattanooga"	Savannah Line	Newport News S. B. & D. D. Co.
"City of Birmingham"	Savannah Line	Newport News S. B. & D. D. Co.
"State of Delaware"	Wilson Line	Pusey & Jones Co.
"State of Pennsylvania"	Wilson Line	Pusey & Jones Co.
"Alaska"	Alaska S. S. Co.	Todd D. D. & Construction Co.
"Greater Detroit"	Detroit & Cleveland Navig. Co.	American Shipbuilding Co.
"Greater Buffalo"	Detroit & Cleveland Navig. Co.	American Shipbuilding Co.
"Republic" (reconditioned)	U. S. Shipping Board	Newport News S. B. & D. D. Co.
"Benville"	Southern Pacific S. S. Co.	Todd D. D. & Construction Co.
"District of Columbia"	Norfolk & Washington S. S. Co.	Pusey & Jones Co.

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F. J. R. R. & T. Co. No. 31	Tidewater Oil Company	Sun S. B. & D. D. Co.
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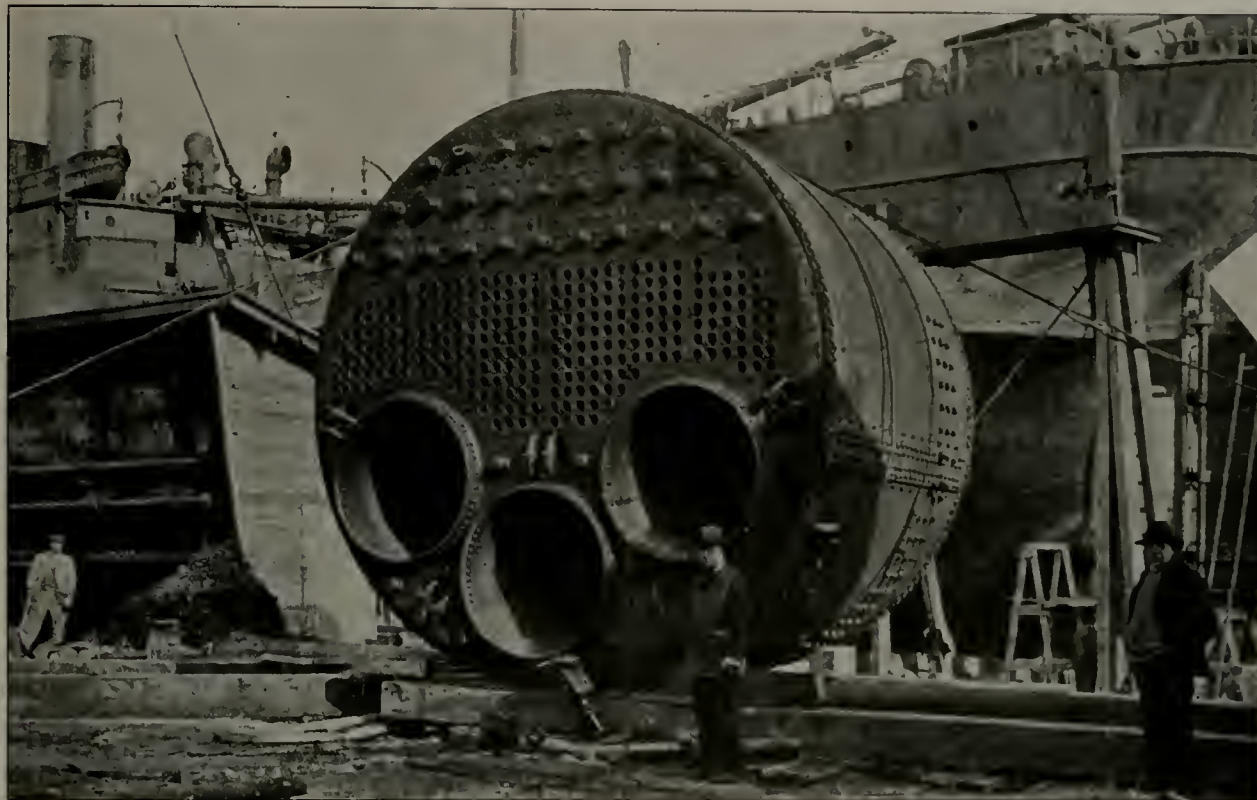
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TRADE LITERATURE

THE "APEX" CO₂ INDICATOR

A NEW boiler room instrument, known as the Apex pneumatic CO₂ indicator, has been developed primarily to meet the demand from the smaller steam power and heating plants for a simple and inexpensive instrument for measuring the fuel wasted up the chimney.

The manufacturer claims that the Apex CO₂ indicator will operate accurately with about five minutes' attention once a week. The price is less than half of that of other CO₂ indicators, including the standard Uehling Model U machine. It is stated that this investment is generally warranted for steam boilers even as small as 50 horsepower, in view of the fuel savings that can be expected through the intelligent use of a reliable CO₂ indicator.

The Apex CO₂ indicator consists of two principal parts, namely, the actuating device, known as the CO₂ meter, and the gauge proper, known as the Type Z indicator. The flue gas flows through the CO₂ meter continuously, developing a changing pneumatic pressure within it, the magnitude of the pneumatic changes depending upon the percentage of CO₂ present in the gas. The CO₂ is absorbed in a dry cartridge placed in the CO₂ meter. The absorption of CO₂ causes a shrinkage of the gas flowing through the CO₂ meter and hence a reduction in the pneumatic pressure. Any given percentage of CO₂ in the gas will produce a definite predetermined pneumatic pressure, which is employed for operating the Type Z indicator. The indicator consists simply of a manometer containing a glass tube filled with colored liquid, which changes its level according to the pneumatic pressure applied to it. A scale located beside the indicating manometer is graduated in percentages of CO₂.

A simple steam or water aspirator is used to draw the gas from the boiler, through the meter. A large volume of gas is by-passed around the meter at the same time, under the action of the aspirator, which results in speedy response to change in furnace conditions.

In entering the CO₂ meter, under an unvarying inlet suction, the gas first passes through constricted passage, then through the dry absorbent cartridge and then emerges through a second constricted pas-

sage, escaping under the constant exhaust suction, previously mentioned. Each of the two constrictions consists of a tube of definite length and bore, which acts as a fixed resistance to the flow of gas. There is no resistance in the absorbent cartridge, the gas flowing freely through it at all times. These cartridges are each guaranteed for a life of 1200 per cent hours and are easily renewable when used up. The pneumatic pressure existing between the two constrictions is at all times below atmospheric pressure and as the percentage of CO₂ increases the pneumatic pressure decreases correspondingly over a wide range because of gas shrinkage due to absorption. The Z indicator is connected to the absorption chamber by means of small bore tubing and it instantly responds to all fluctuations in the pneumatic pressure.

A point of particular interest is that at no time is the gas hermetically sealed in the CO₂ meter. This fact makes it always possible for the indicator to point to the percentage of CO₂ existing in the meter at the moment.

The Apex CO₂ indicator employs the Pyro-porus filter, which is placed on the end of the sampling line within the boiler setting and completely excludes soot and ash. Another important claim for the Apex instrument is the elimination of sulphuric acid fog from the gas and the complete drying of the gas, which prevents corrosion of the sampling line.

The Apex CO₂ indicator is being manufactured by the Uehling Instrument Company of Paterson, New Jersey. A corresponding instrument of the recording type is also being introduced by the same company. Both types are illustrated in Uehling Bulletin No. 118.

Keeping American Ships on the Seas; an interesting brochure with three-color front cover picture of an American clipper ship and back cover color insert of a modern passenger vessel. Published by The Worthington Pump & Machinery Corporation, the booklet contains 24 pages and is devoted to a resume of the history of American shipping and to an exposition of internal combustion engine development, culminating in the Worthington double-

acting 2-cycle engine and the record of the Worthington Pump & Machinery Corporation in the design and construction of diesel engines.

The new bulletin on Russell U-tube Storage Heaters, which has just been published by The Griscom-Russell Co., 90 West street, New York, has several features that make it of real usefulness and permanent value to architects and heating engineers.

One of the features that will be of particular help in selecting a suitable heater for given conditions is the completeness, logical arrangement, and legibility of the tables.

These tables cover an exceptionally large number of steam pressures as well as initial and final water temperatures, and include complete details of tank sizes, capacities, and dimensions for a wide range of storage capacities. Typical examples of heater and tank selection are fully worked out for various operating requirements to show the factors that must be taken into consideration to assure satisfactory results.

Besides a complete description with details of construction and specifications of the Russell U-tube storage heater, the bulletin also contains a valuable table of data which have not hitherto been published on hot water requirements for various industrial and domestic uses, and a double insert page of templates for storage tanks.

Shepard Electric Crane & Hoist Co., with main office and works at Montour Falls, N. Y., has issued an illustrated catalog and price-list on floor operated electric hoists.

This catalog contains a complete description of the Shepard floor operated hoists and illustrations and explanations of the various types of hoist and their practical application, together with price-lists. Shepard electric hoists have been manufactured for twenty years and are of a design and construction that provide a truly low cost method for the movement and lifting of loads of every description. The installations illustrated in the catalog are examples of their application to various uses in plants, warehouses, shops, and stores.

Pacific Marine Review

The National Magazine of Shipping

FEBRUARY, 1925

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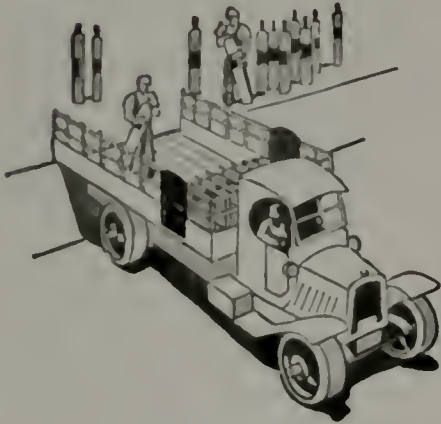


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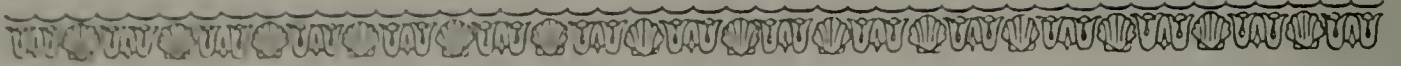
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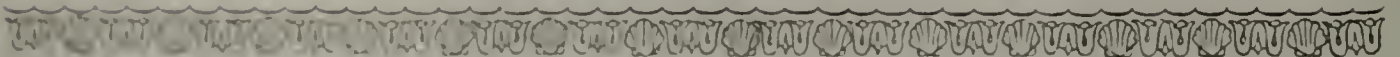




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ALIEN SEAMEN

Some Considerations Anent Their Status Under the Immigration Act of 1924 and Amendments to Same Now Contemplated by Congress

By EDWIN H. DUFF

WHEN the so-called La Follette Seamen's Act was being considered in 1914 and 1915, the representatives of seamen's organizations successfully contended against what they termed "involuntary servitude" and secured for seamen of all nationalities while in United States ports freedom from interference should they desire to desert their vessels within the jurisdiction of the United States.

However wise this section may have been from the standpoint of consistency with American institutions and constitutional guarantees, it now presents one of the most difficult problems our Government has to deal with in carrying out its avowed policies of restricted immigration, inasmuch as the seaman's status under our immigration laws is alleged to afford ready means for otherwise inadmissible aliens effecting illegal entry into the United States temporarily for the purpose of reshipping foreign.

Immigration Act 1924

Recognizing the abuse of this seaman's status, Congress, in enacting the Immigration Act of May 26, 1924, required that all vessels entering United States ports detain on board all alien seamen until they can be examined and a determination made as to whether or not they are bona fide seamen or are merely using that status as a means of entering in violation of our immigration laws. The vessel is an absolute insurer against the escape of such seamen before they are inspected under a penalty of \$1000, as it is also if the immigration officers order a seaman detained and deported and the vessel fails to detain and deport him.

While this law has been in effect but a very short time, the Commissioner General of Immigration in his annual report, after stating that "to construct legislation which will enable the Immigration Service to prevent the unlawful entry of aliens in the guise of seamen without interference with the legal and inherent shore privileges of bona fide seamen is a difficult if not impossible task," reports:

"The full effect of this provision of law cannot be foreseen, but the outlook is promising, and if its enforcement results in a more careful selection of crews in foreign ports with the purpose to avoid shipping men who are immigrants instead of seamen, it is believed that much good will be accomplished."

Notwithstanding the strictness of the present provisions of law, it is understood Congress contemplates amending same to require vessels engaging more than

one-half of their crews abroad to carry, on the return voyage from the United States, as many alien seamen as were on board on the inward voyage, and to prevent the employment of Asiatic seamen on vessels entering United States ports except those upon which they are nationals.

As to the requirement that vessels must take out as many alien seamen as they bring in, this seems to be entirely unnecessary if the provisions of existing law continue to be enforced. It would in many instances work a hardship upon transportation companies and is predicated upon an erroneous premise.

Since the immigration officials have a right to require all vessels to detain on board and deport aliens whom they do not feel are bona fide seamen under the Act of May 26, 1924, manifestly such an amendment of the law as is contemplated is not required and its enactment would result in simply legislating alien seamen into positions where they are not needed.

Seasonable Employment

Take, for example, the many passenger vessels in the North Atlantic/United Kingdom and Continental trades. The American tourist rush to Europe occurs within a well defined period in the spring and summer and they return to the United States during the fall. From a navigating standpoint the vessels require no additional seamen to handle this traffic, but must engage extra men in the steward's department to look after the comfort of the passengers. These men are waiters, bedroom stewards, cooks, pantry-men, etc., who play no part in the navigation of the ship, but are regarded as seamen for immigration purposes.

The passenger traffic during these periods is practically all one way—outward in the spring and inward in the fall—and consequently the additional men in the steward's department in some cases are shipped only one way. Therefore, while some of the ship's crew may be discharged in the United States and no others engaged to take their places, what increase in population results from the discharge of such employees in the United States is offset by the discharge of practically an equal number of men abroad for the same reasons.

In some instances, such as shipwreck, seamen being left behind abroad who are not deserters, etc., vessels sign on additional men in bona fide cases at their foreign termini for transportation to the United States. The men in reality are not needed for the operation of the vessel, and to require the vessel to

sign on additional men on the return trip to take their places would manifestly be unjust.

Other instances might properly be referred to why this provision should not be enacted into law, such as where marine labor is scarce, in cases of strikes, etc., when the vessel, inasmuch as it has no right to compel the return of its original crew under the LaFollette Seamen's Act, might be tied up for considerable time because it cannot obtain as many alien seamen as it had on board when it entered. It hardly seems necessary, however, to go further into this phase of the situation since bona fide seamen are and should be permitted to enter the United States in pursuit of their calling, and mala fide seamen are already taken care of under existing provisions of law.

Desertions

Regarding the premise upon which the proposed legislation seems predicated, namely, the large number of desertions recorded, which is alleged to be due to the desire of aliens to enter the United States in violation of our immigration laws, it is not believed the situation is as serious as the recorded figures would tend to show, inasmuch as it attributes desertions almost entirely to a desire to evade our laws, whereas another, and perhaps a stronger cause, is almost lost sight of.

Mala fide seamen having already been taken care of by the existing law, it would seem that the basis of the amendment is the desertion of bona fide seamen, who have what amounts to an inherent right to come ashore in the United States, and are permitted by law to actually desert their ships within the jurisdiction of the United States.

Recalling the fact of the low wages paid on vessels engaging crews at foreign ports as compared with those paid on vessels at United States ports, illustrates that undoubtedly the cause of many desertions is but the desire of the seaman to reship foreign at a higher wage. Just what proportion of alien seamen recorded as deserting at United States ports have reshipped foreign is problematical, but undoubtedly the percentage is very large as bona fide seamen are dependent upon their calling for a livelihood and just as soon as possible usually reship.

It would not be amiss to also point out what might otherwise be lost sight of and that is the tendency of seamen, both American and foreign, to desert their vessels without what appears to be any cause other than the desire to be ashore awhile, after some months at sea, notwithstanding their agreements call for further services. It seems hardly necessary to assure anyone that this tendency causes the shipowner and operator as much, if not more, concern than it does our immigration officials, for to have several seamen desert often ties the vessel up for hours.

Asiatic Seamen

Before discussing the matter of how the entire seamen situation should be handled, it seems advisable to discuss separately those provisions of the proposed amendment which deal with the inhibition against the employment of Asiatic seamen on vessels entering the United States other than those upon which they are nationals, although there really is no reason why Asiatic seamen should not be dealt with the same as any other alien seamen.

Our policy towards the Orient has already caused a somewhat strained relationship because of discrimination in instances where it has apparently been necessary, and these friendly relations which are so con-

ducive to close commercial intercourse should not be further tried by unnecessary measures.

As has already been pointed out in dealing with the seaman situation in general, the present law seems capable of preventing very serious abuse of the exemption granted seamen under our immigration laws, and in the heat of sentiment that might develop should Chinese seamen be further discriminated against, retaliatory measures might be invoked by our trans-Pacific neighbors which would result disastrously to the commercial intercourse which has been developed.

While no red-blooded American with the proper patriotism can but feel that Americans are the equals of any other nationals in the performance of any given task, the fact remains that the disposition of Americans does not lean towards the performance of certain menial tasks that are a part of present day ship operation. In the days of the old clipper ships, before the large passenger liners, and when America as a factor in ocean transportation was at its zenith, when practically all work on shipboard was connected with the navigation of the vessel, when navigating skill, enterprise and courage were material factors of our success, the American took to the sea and better sailors were not to be found, but the average American just does not seem to fit in or want to be one of those that form a large part of the crews today, such as bedroom and dining-room steward, waiters, pantry-men, cooks, etc.

Such duties on board ship must, however, be performed and the ship owner should not be unduly hampered in the selection of those who can be employed to perform them. Experience has proven that Asiatics, particularly Chinese, are oftentimes desirable, as they are orderly, sober, industrious and competent.

The trans-Pacific services should also be taken into consideration as there the Chinese situation evidences itself most prominently. The competition between American, Japanese and Canadian services is particularly acute and American lines should not in anywise be handicapped at the risk of possible benefits to their foreign competitors. It can readily be seen that were an American line to lose any number of its seamen at oriental ports through desertions, etc., as is often the case, were the proposed amendment enacted into law, it would have either to sail shorthanded, or employ other white seamen to take the places of those deserting, which often is very difficult, whereas our Canadian competitors would not be so restrained.

If the immigration inspectors are satisfied that any Chinese employed on board vessels entering the United States ports contemplate smuggling into the United States, he may order them detained and the vessel must detain such Chinese under penalty of \$1800 under the existing law. As a matter of fact, however, a great many companies employing Asiatics do not permit them shore leave while in the United States, hence with this double safeguard the present law seems adequate.

Although there is feeling that the provisions of the Act of May 26, 1924, with regard to alien seamen, might be improved upon so far as the enforcement of our immigration laws are concerned, there is no reason why the present law should not be effective. It has not been in effect sufficiently long to enable an intelligent statement, based on facts, of what results it will accomplish.

From the standpoint of the shipowners, the law appears to be somewhat onerous inasmuch as no

amount of diligence or precaution will relieve the vessel from a fine of \$1000 should a seaman escape, but it can hardly be hoped that within the limited time remaining of this Congress the requisite consideration can be given by Congress to the enactment of any law that will cover the situation in the best interests of all concerned. The subject presents many problems inasmuch as almost every service operates under somewhat different conditions and the proper law could only be arrived at after full and impartial hearings of all interested parties and the application of abstract ideas to concrete cases.

Should Congress act hastily on this matter, other

and additional results to those I have tried to point out hereinbefore, might arise which would prove inimical to the proper enforcement of immigration laws, the welfare of the seamen and the shipowners.

By the time the next Congress convenes an improved plan for handling this matter may be evolved from the thought that the shipowner, seamen and Congress are giving to the subject and the conclusion is inevitable that the time is not now opportune to effect any material change in Act of May 26, 1924, which provisions have not yet been in effect sufficiently long to determine their results.

A SHORT SURVEY OF SOME COMMERCIALY HELPFUL ACTIVITIES OF UNCLE SAM'S BATTLE FLEET

THE American people after every war have shown a tendency to weaken the Navy. This tendency shows a lack of appreciation of the fact that the Navy is not only one of the great providers of "the common defense," but also one of the best promoters of "the general welfare." Particularly is this true in matters of foreign trade, upon which our general economic welfare so largely depends.

Every year of the Navy's peace-time history furnishes one or more unusual activities successfully undertaken for the furthering of good relationship between the United States and foreign countries. Every year, too, sees some milestone passed in engineering, or some scientific achievement thrown open by the Navy to commercial development.

The Navy's helpful participation in relief work after the Japanese earthquake, their advances in aviation, their researches in oceanography, and their provision of charts from the Hydrographic Office are a few of the works which are set forth in detail on the pages of "The United States Navy as an Industrial Asset," recently published by the official Naval Intelligence at Washington, D. C.

One of the great peace-time duties of our Navy is to promote good will toward America in all parts of the world. This is not only for the assistance of our State Department in carrying on its policies with foreign countries but it is to promote trade with American concerns. In this connection the report of a ship at Gothenburg, Sweden, is of interest. The North Dakota during the training cruise of midshipmen last summer called at Gothenburg on the occasion of the 300th anniversary of that Swedish city, during what was known as Swedish-American week. The officers and men were most cordially received by the authorities and all the populace. The American colony was especially grateful for the call of an American ship at this time, as it did much to enhance the prestige of America in this exposition.

Let us go from Sweden to Brazil and see what the American Navy is doing there. A mission of naval officers has been there for about two years reorganizing the Brazilian Navy, inspecting its material condition and establishing modern methods of repair in their shops and shipyards, revising the regulations of the Naval medical department, aviation service, arsenals, their communication service, preparing a program

for fleet training, and making administrative reforms in their Navy Department. The effect of the presence of this mission has been to direct the attention of the growing country of Brazil to the United States for the purchase of manufactured materials that are essential to progress.

Now, let us jump half way round the world from Brazil to China, for like the American Navy we must cover all parts of the world wherever American interests are at stake. China is in a more chaotic state than she has been for several generations, with the leaders in each province a law unto themselves and with no central government that can be held responsible for acts committed upon foreigners in China.

The situation in China today has been and is still claiming space in the metropolitan newspapers. Several units of our Asiatic fleet are at Shanghai in the center of the trouble zone and other vessels are in various Chinese harbors. American blue-jackets are ashore in Shanghai, cooperating with men from British, French, and other war vessels in the protection of the foreign settlement.

Recently, through the tact of one of the commanders of a United States gunboat on the Yangtze River, representatives of the generals of two opposing armies were brought together in a truce which prevented the bombardment of a large and popular Chinese city. The forces of the general surrounding the city held such strategic points that the bombardment of the city to dislodge the opposing troops would have cost great loss of life.

Let us now go to Turkey, for that has been one of the most interesting parts of the world for the last several years. America and all Americans are known throughout the world for their great assistance toward humanity. Every good citizen thrills at the recollection of the part that America took in alleviating the suffering of the Near East. The part that the American Navy took is not known by all. The American destroyers under Admiral Bristol had charge of and assisted in the evacuation of Asiatic Turkey by hundreds of thousands of refugees. From the area immediately surrounding Smyrna alone, 262,000 refugees were removed to the islands of the Aegean and the mainland of Greece. In one load, a destroyer of 1200 tons with a crew of 115 officers and men carried 671 Armenian and Greek women and children.

MARINE SHOW—1925

An Unusual Opportunity Offered to American Manufacturers Who Cater to the Maritime Market

ON May 17, 1922, the American Marine Association was incorporated under the laws of the State of New York to take up the work that had been already begun by the Marine Equipment Association of America. Its objects, as stated in the pronouncement at that time were "to advance the interests of its members; to promote good will between those who buy and those who sell marine equipment and supplies; to promote and supervise exhibits; to cooperate with other associations in the marine field to the end that their efforts for the advancement of the designing, building, and operation of ships shall be most productive." In other words, the American Marine Association was formed as a means of promoting the best interests of the American merchant marine.

During the first year this association inaugurated the idea of "American Marine Week," the third week of November of that year being set aside for the purpose, and it was determined that during American Marine Week an exhibition of American marine products would be held each year in conjunction with the annual meeting of the American Society of Naval Architects and Marine Engineers and other technical organizations. In 1921, 1922 and 1923 this exposition was staged in the Grand Central Palace, New York.

In 1923 the ideas of the American Marine Association were further elaborated by the formation of the



The Anti-Aircraft Armory at Sixty-second Street and Columbus Avenue, New York City. This building will be the site of Marine Show, November 9 to 14, 1925.

American Marine Congress, in which, during American Marine Week, ninety-seven organizations from various parts of the United States were brought together at a convention and a dinner for the purpose of boosting nation-wide the American merchant marine idea.

During 1924 the activities of the American Marine Association were somewhat restricted, and it was determined, in the interest of economy, to hold no exposition. Now, early in 1925, it has been determined to hold a better and larger exposition during marine week, which this year has been set as November 9-14.

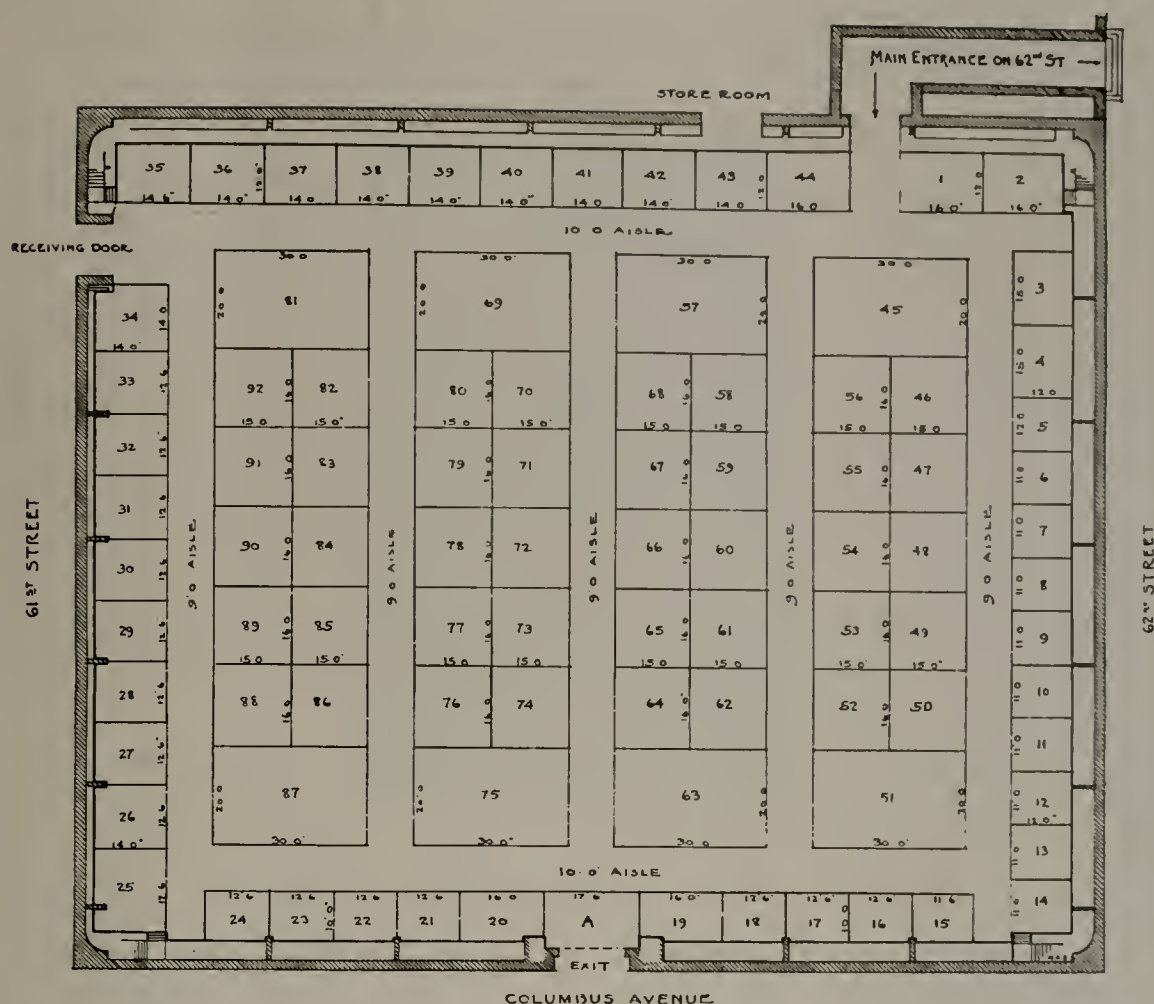
For the purpose of this exposition it has been decided to change the location to the Anti-Aircraft Armory at the corner of Sixty-second Street and Columbus Avenue, New York City, for the reason that this location and this building seem better suited for the purpose of the exposition.

It will be noted in the arrangement of space on the diagram reproduced herewith, that the committee has arranged the aisle and booth layout so that it is entirely feasible to drive a heavy truck loaded with bulky apparatus directly from the street onto the Armory floor and right up to the booth. This, in conjunction with the large clear entrance as shown in illustration, makes it possible for the exhibitors to show their most valuable products, with minimum expense and minimum hazards of moving same into the booth. Freight terminals are nearby, and the Armory is very accessible by both subway and elevated transportation.

It is therefore felt that the Marine Show of 1925 will be held at a much lower cost than former shows and with a much better return to its members. The exhibits committee has devoted a great deal of time and study to make this 1925 exposition a great success, and they feel that with the cooperation of the entire membership of the association, success is already assured. They bespeak the early signing of contracts for space and the use of member influence upon industries and others who should be represented in



Recessed entrance to the Anti-Aircraft Armory showing layout of aisles and booths.



Floor plan of the Anti-Aircraft Armory, showing arrangement of exhibit booths and aisles. Note the clear passage for heavy trucks from receiving entrance to any exhibit.

a marine show. This should include all those who build marine equipment for shipbuilding or for ship operating. It should also include those engaged in developing ports, improving channels and harbors, and in the development of material handling machinery. It is to be strictly a case of first come first served.

A gilt-edged opportunity is being offered to the marine fraternity, and it is our measured judgment that they should accept the same and cooperate to the limit.

THE ENGINEERING, SHIPPING, AND MACHINERY EXHIBITION

CONSIDERABLE PROGRESS is being made with regard to the American section of the International Engineering, Shipping, and Machinery Exhibition to be held at Olympia, London, from November 23 to December 5, 1925.

F. W. Bridges, general manager and organizer of the exhibition, has been in this country for some time, visiting many of the principal industrial centers and interviewing the manufacturers, exporters, shipowners, and others connected with the various industries concerned. As a result of two important meetings held in New York, an advisory committee has been formed under the chairmanship of F. D. Herbert, president of the Kearfott Engineering Company, Inc., to cooperate with a similar committee in London, and a special list of American patrons has been secured.

An executive committee has also been formed comprising well-known men in the engineering and shipping world. Among the committee are several who have visited and taken part in previous exhibitions under the same auspices and management. These are so convinced as to the value of this means for securing world-wide publicity among the special classes to whom the exhibition caters, that they are giving time and energy to secure a representative showing of American manufacturing, industrial, and transportation equipment for display before the commercial and shipping world.

American manufacturers who have specialties adapted to shipyard work, ship-equipment, and general engineering purposes should take advantage of this opportunity to introduce them to the shipowners, engineers, port, dock, and harbor authorities in every part of the globe.

Mr. Bridges, having returned to England by the Berengaria on November 26, has arranged with the General Exposition Company, 817 Bowery Bank building, East Forty-second street, New York City, to conduct a vigorous campaign throughout the United States during the next twelve months, so that a thoroughly representative American section may be produced which will do credit to all concerned.

RADIO TELEPHONE ON SHIPBOARD

RADIO telephony on the Pacific has made such strides forward in the last few months that it is now possible for passengers on the steamship Maui and steamship Matsonia, the two largest ships of the Matson Navigation Company's passenger fleet in service between San Francisco and the Hawaiian Islands, to converse not only with each other but also to talk by wireless telephone with friends in Honolulu and San Francisco owning radio receiving sets.

When the Matson liner Maui, flagship of the line's passenger fleet, steamed from San Francisco on January 7 for Honolulu, she carried a complete radio telephone, installed by the Radio Corporation of America, and capable of talking with her sister ship, the Matsonia, a distance of 350 miles in the daytime and 700 at night, under favorable weather conditions. The Maui's radiophone set is a five-tube, 250-watt installation, Type E-T-3602. It is virtually three sets in one, as it includes interrupted continuous wave, continuous wave, and radio phone equipment.

The Maui's radio phone set is much smaller than the Matsonia's, the latter ship's set, installed in 1922, having a power of 1000 watts, the largest on any Pacific Coast liner. The Matsonia has held phone conversations with ships and stations 1200 miles distant, at night with favorable conditions, according to Radio Corporation officials. The Maui's set is identical with that installed on the Admiral Line's fast coastwise steamer H. F. Alexander a year or two ago.

As the Matson liners Maui and Matsonia pass in mid-ocean halfway between Honolulu and San Francisco, 1045 miles from land in either direction (the greatest distance from shore in any ocean) they are now able to actually speak with one another practically every day but one of the six-day voyage between San Francisco and Hawaii. Should Captain Chas. Peterson, the Matsonia's commander, desire to inquire from Captain Peter Johnson, master of the Maui, how the weather is, he simply steps to the wireless telephone booth, in the purser's office, and asks the operator to get him the Maui. In a few minutes, if there is no bad interference or static, he and the Maui's command-



A close-up of the radio telephone set on the Matson Line's steamer Maui, with Chief Operator Frank E. Rutzen, one of the best "sparks" on the Pacific.

er are able to speak with one another just as they would on shore using a land telephone.

The only drawback to conversations between passengers on the two ships is publicity, as anyone with a sufficiently powerful receiving set can listen in, either in Honolulu or San Francisco, and hear everything passengers on the Maui say to their



One of the Maui's passengers, Miss Gertrude Seaver of Berkeley, talking on the ship's radio system.

friends going in the opposite direction on the Matsonia.

When the new \$7,500,000 express Matson liner Malolo (Flying Fish) now being built at the shipyard of the William Cramp & Sons Ship & Engine Building Co., Philadelphia, is completed early in 1927 she will also be equipped with a powerful radio telephone set, enabling her passengers to speak with friends either on the Maui or Matsonia, or her commander to call up the captains of the other two ships on business or to pass the time of day.

Rates have not as yet been established on the Matson liners for the ship to ship radio telephone service and it is at present free for passengers to use, although of course subject to the handling of regular commercial traffic.

IMPERIAL, \$200,000 STEAM YACHT, BEING CONVERTED

THE well known steam yacht Camperno, recently renamed the Imperial by its owner, Willis Walker, San Francisco capitalist and yachtsman, has been dry docked at the Crowley Shipbuilding Company, Oakland, California, for the purpose of converting from steam to diesel power.

This craft, formerly powered with 150 horsepower steam engine, is to be changed to 170 horsepower Western-Enterprise diesel marine engine. It is estimated that a saving of more than 50 per cent in operating cost, and an increase of speed will be effected by this change.

The Imperial is but one of many large yachts in Pacific waters that are contemplating a conversion of this kind, and many installations in new craft have been reported by diesel engine manufacturers. The Puget Sound district, because of the particular suitability of diesel engine power for the hundreds of small boats that are there, have been exceptionally responsive in adopting this economical motive power. As the cost of oil for fuel is rising, a saving of 50 per cent and often times as great as 90 per cent will amount to a worth-while sum over a period of a year to these gas motored boats, quickly returning to the owner and operator the expense of conversion.

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

MOTOR PASSENGER LINERS

Some Notes on the Machinery of the Motorships Aorangi and Monte Sarmiento

SPECIAL BRITISH CORRESPONDENCE

IN Europe, the motor passenger liner has definitely arrived with the completion of the Monte Sarmiento and the Aorangi. The former is one of two vessels for the Hamburg South America Line, for trade between Hamburg and Buenos Aires and other South American ports, whilst the latter is a high class liner to run on the Union Steamship Company of New Zealand's Pacific service between Vancouver, the Fiji Islands, Sydney, and New Zealand. The comparative dimensions of these two remarkable ships are of some interest, especially if it be borne in mind that apart from them, the largest motorship afloat has a gross tonnage of 9000 and the machinery of 4500 shaft horsepower.

	Aorangi	Monte Sarmiento
Length over-all	600'	523.9'
Length b. p.	585'	496.9'
Beam	72'	65.45'
Depth	46.5'	50.2'
Gross tonnage	18,500	14,200
Engine power	13,000 s.h.p.	7,000 s.h.p.
Speed	18 knots	14¼ knots
Number passengers, about	1000	2420

It should be noted, however, that whilst the Monte Sarmiento is a one-class ship intended mainly to carry passengers of the emigrant class, the Aorangi is, perhaps, one of the most luxurious liners that has yet been turned out, with accommodation equal, or superior to, that on modern trans-Atlantic passenger ships.

The machinery installation is, in each case, of exceptional interest, apart from its high power. Both vessels are equipped with four engines, but whereas in the Monte Sarmiento they are arranged to drive onto two propeller shafts, in the Aorangi a direct drive is employed with quadruple screws.

WORLD'S LARGEST MOTORSHIP

Much interest was evidenced in San Francisco over the arrival of the Union Steamship Company's new motor passenger liner Aorangi. The vessel negotiated the 8000-mile voyage without incident and with her four Fairfield-Sulzer 2-cycle diesels performing perfectly.

On her 60-hour sea trial, the Aorangi developed 15,300 I. H. P., 12,200 B. H. P., and 17.91 knots an hour speed at 123 revolutions per minute. The fuel consumption for the main engines figured .395 pound per B. H. P. per hour, or for all purposes, exclusive of the steam boilers, .431 pound per B. H. P. per hour.

These results are considered very satisfactory, especially in view of the fact that a large portion of this trial was in half a gale of wind, with heavy head seas. The Aorangi is now on the regular run of the Canadian-Australasian Royal Mail Line, operating from Vancouver to Sydney, via Honolulu, Suva and Auckland.

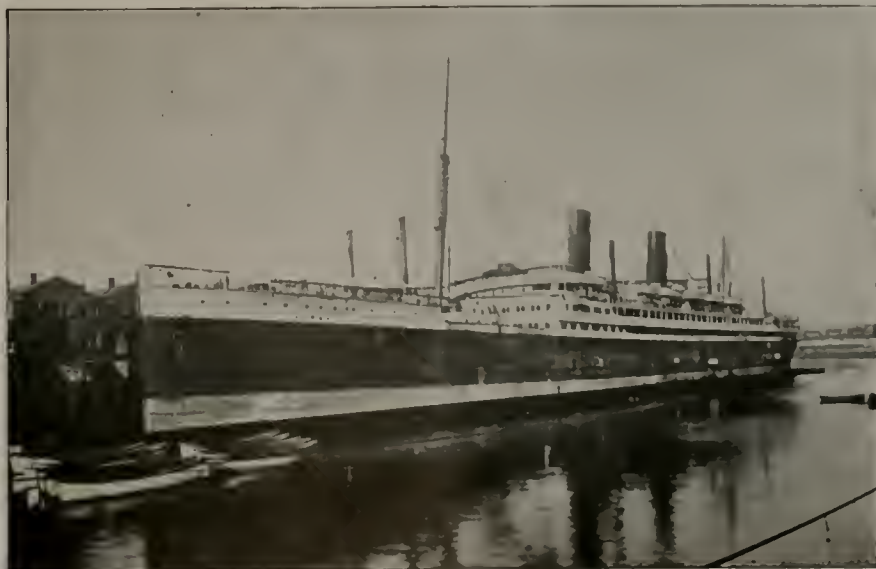
Monte Sarmiento's Machinery

In the Monte Sarmiento the four engines are of the four-cycle single-acting M. A. N. type, but running at the abnormally high speed of 217 revolutions per minute. It is somewhat surprising to learn that the gear wheels are rigidly coupled to the engine shaft without any device to ensure what might seem to be necessary flexibility. Trials were in fact made with a flexible shaft but, according to the builders, this was found to be unnecessary. By the gearing, the propeller speed is reduced to between 75 and 80 revolutions a minute.

Still more surprising is the employment of trunk piston engines, which are not considered wholly suitable for seagoing work by most shipowners. The object of their adoption is to reduce weight and, particularly, height; but the owners are apparently not quite satisfied that this is wholly desirable, and in the sister ship, which is now being built, motors of the crosshead design will be fitted.

In order to develop the maximum possible power from cylinders of a moderate size, air is applied to the engines under pressure, instead of being drawn into the cylinders on the suction stroke, direct from the atmosphere. This involves the installation of three electric blowers, driven by motors of about 150 brake horsepower each, and air is discharged from them at a pressure of ½ pound per square inch to the admission valves of the main engines. In this way the power is increased about 15 per cent beyond that which it would be possible to develop, without the employment of this supercharging arrangement.

Although electricity is used for practically all purposes on the ship, in order to attain further economy the exhaust gases from the main and auxiliary engines are led through four exhaust boilers where



steam is raised for heating and for use for cooking and other purposes.

The auxiliary machinery of the Monte Sarmiento is almost as remarkable as the propelling plant. In a separate engine room, forward of the main engine room, are installed five diesel engines each of 650 brake horsepower and driving dynamos of some 400 kilowatts. The provision for electric power thus seems somewhat extravagant, but a very large amount will be absorbed in the galley, which is electrically operated and probably represents one of the finest equipments of this nature on shipboard. Moreover, the auxiliary machinery in the main engine room absorbs a very considerable amount of electric power.

The Aorangi's Machinery

The machinery of the Aorangi is still more interesting than that of the Monte Sarmiento on account of its large size. The vessel and the engines were built at the Fairfield Yard on the Clyde and the machinery is of the well-known Sulzer two-cycle single-acting type. Normally, the output of each is 3250 brake horsepower, thus giving a total output of 13,000 shaft horsepower, which is sufficient for the ship to maintain a speed of about 17½ knots at sea. These engines, however, are designed with a substantial overload capacity and can be worked up to about 3750 brake horsepower with comparative ease. On trials, in fact, a speed of well over 18½ knots was understood to have been attained. Normally the engines run at 125 revolutions per minute.

In the Aorangi, as in the Monte Sarmiento, all the controls are placed, not at the bottom of the engine, as might be imagined, but at the top. Each engine is provided with its own reversing wheel, starting lever, and fuel throttle and is self contained with all the necessary gauges, etc. It is claimed, therefore, that in case of absolute emergency all the four engines

could be controlled by one engineer. Normally, however, there will be two for this purpose.

An interesting feature in the main engine room of the Aorangi is seen in the three large turbo-blowers, electrically operated, which are installed for the purpose of supplying scavenging air to the main engines, instead of having cumbersome and heavy piston scavenging pumps driven off the main engines. This would decrease the power available for the propellers, and probably make the engine weightier and more costly. There are three of these turbo-blowers, all of which draw their air from trunks leading to the deck, and are arranged in a special suction chamber within the engine room itself. The size of these units may be gauged from the fact that each is coupled to an electric motor of about 430 brake horsepower running at a maximum of 2600 revolutions per minute. The motors are direct current machines, and at the time the order was placed no British firm could supply commutator motors of this speed, so that Swiss machines are installed.

The auxiliary engine room is forward of the main engine room, and between the two are arranged a number of tanks in which a large proportion of the fuel oil is carried, some also being accommodated below the engine rooms. The auxiliary machinery is partly steam and partly electrically operated. In the auxiliary room are two fairly big Scotch boilers and four two-cycle engined dynamos, each of 400 brake horsepower. Most of the electric power will be required for the operation of the turbo-blowers previously mentioned, and two dynamos will be needed for this purpose alone; so that, in all, there will be three generators in service at sea and one boiler, this latter being oil-fired. It is anticipated that the daily fuel consumption for all purposes will be about 60 tons, which is obviously a very low figure for a large fast liner of this sort.

FUEL OIL CLARIFYING SYSTEM ON THE DIESEL-ELECTRIC DREDGE CLACKAMAS

By JAMES H. POLHEMUS
General Manager, Port of Portland Commission

IN the December, 1924, issue of Pacific Marine Review there was published a short general description and general arrangement plans of the new diesel-electric, hydraulic pipe-line dredge Clackamas, now being built by the Port of Portland for use on the Willamette and Columbia river channels.

The Port of Portland Commission has already had considerable experience with a smaller diesel-electric dredge, the Texas, which was built by them in 1923 and subsequently sold to the Long-Bell Lumber Company.

In a hydraulic pipe-line dredge working on large operations continuously, full power running on 24-hour schedule is the rule, and it therefore becomes very important to make savings on fuel. In the dredge Texas, operating with a 525 brake horsepower Werkspoor type, Pacific Diesel Engine Company's, 4-cycle, single-acting trunk piston diesel engine, boiler fuel oil has been used with considerable success by heating the oil and settling for eight hours, draining off the excess water before introducing as fuel in the diesel engine cylinders. It was therefore determined

to amplify this system on the Clackamas, and after considerable work with the Pacific Coast representatives of the Sharples Separator Company, the McIntosh & Seymour Corporation, and the operators of the diesel-electric dredge Texas, a system was worked out for burning straight commercial boiler fuel as supplied by the California oil companies, which system it is expected will show a yearly saving of from fifteen to twenty thousand dollars as compared with the use of diesel fuel oil.

The main power plant of the Clackamas consists of two 900 brake horsepower and two 800 brake horsepower McIntosh & Seymour air injection, 4-cycle, single-acting, trunk piston type, full diesel engines, each engine driving an independent, direct current, 500-volt generator. The plant will work continuously on three 8-hour shifts per 24 hours. The fuel consumption will be about 40 barrels per 8-hour shift. It was therefore decided to treat the fuel oil in 40-barrel batches.

Having reference to the plans reproduced herewith, the routine is to fill the two upper tanks, A and A1, with fuel oil pumped from the general fuel oil bunk-

ers. In these bunkers the oil is heated by hot water coils to 140 degrees Fahrenheit, taking about two hours to come up to this temperature. The oil is kept at this temperature for the balance of the 8-hour shift, breaking up the emulsified oil and water and allowing most of the water to settle into the bottom of the tank. The heated oil is then run through the centrifuge to the day tanks, B and B1. The day tanks are also fitted with hot water coils, to keep the pure oil at any desired temperature, and are set high enough so that there will be a small head on the suction side of the engine fuel pumps.

Tanks A and A1 have 300 square feet each of hot water coil; B and B1 have 150 square feet of hot water coil each. The water circulating through these coils will be at about 200 degrees Fahrenheit and will be used also for heating the living quarters on the dredge and for heating the fuel oil around the suction intakes in the dredge's oil bunkers. This hot water circulates in a closed system, heat being taken from the engine mufflers through heating coils.

Thus we have an operation cycle as follows:

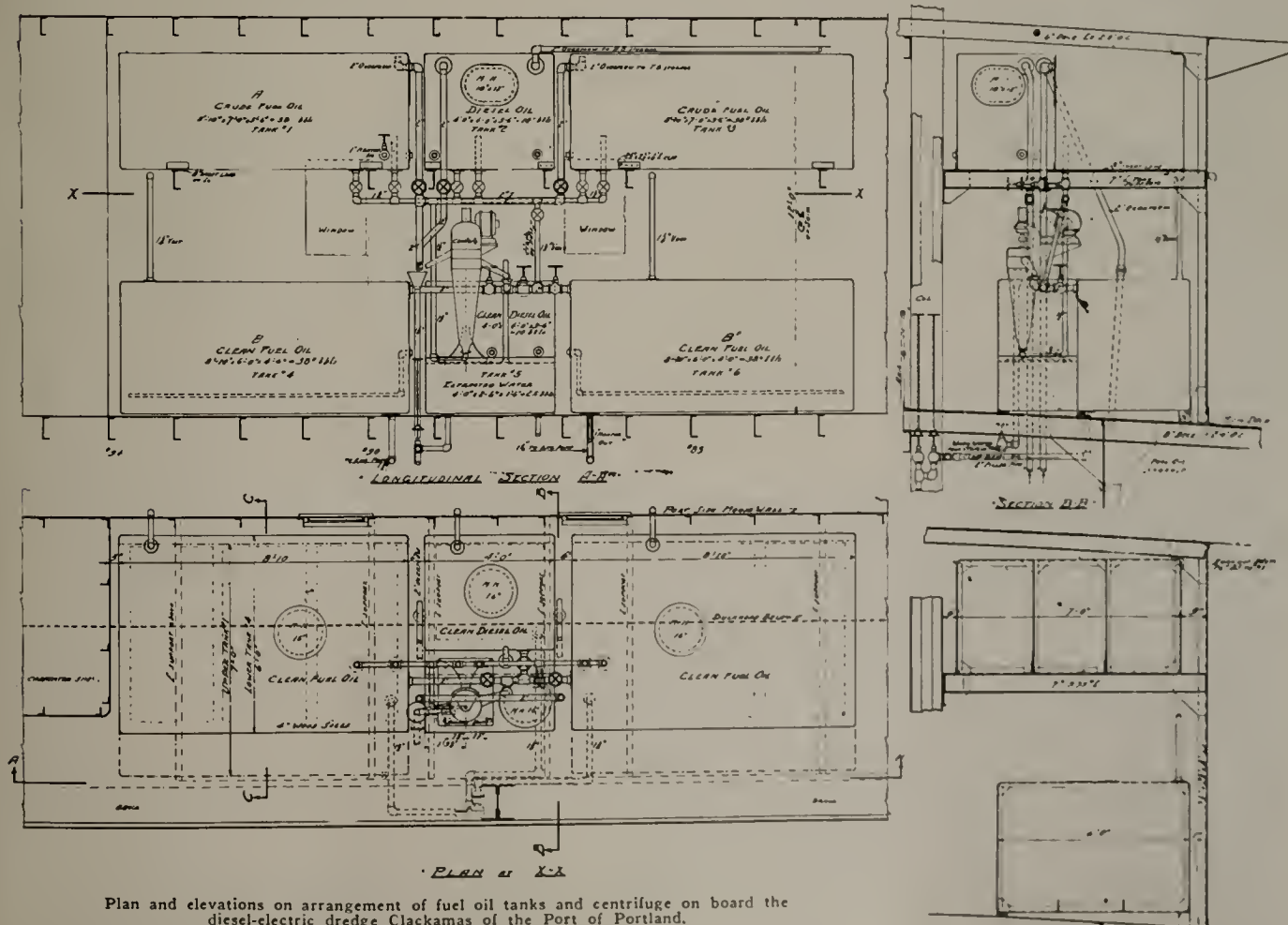
One B tank is feeding fuel into the engines and one A tank is being filled and heated, while the other A tank, having already been heated and settled for eight hours, is being run through the centrifuge into the other B tank. It will be noted that after being pumped into the A tanks the whole operation is by gravity and without any aid from pumps. The B, or day service tanks, are carefully calibrated and gauged, so

that the fuel consumption can be accurately determined at all times.

A No. 6 Sharples mechanical centrifuge is used. This has a rated capacity to run the 40-barrel batch of oil in about 7 hours. A spare rotor is carried and it is planned to change the rotor at every shift. It has been demonstrated that this mechanical centrifuge will extract from the oil any water not removed by the settling process, and will also extract suspended impurities, such as sand and grit. The piping of the system is so arranged that the centrifuge may be bypassed and put out of the system without interrupting the operation of the engines.

After better than a year's constant operation on a 24-hour day schedule, the Pacific Diesel Engine Company's Werkspoor type engine on the dredge Texas was taken down and it was found that the cylinder wall and bearing wear was little or nothing. No unusual trouble had been experienced with valves due to either sulphur or asphalt contents of the fuel oil, and the operating engineers stated that they preferred the straight boiler oil to the special diesel oil, the engines running better on the former than on the latter and with a cleaner exhaust. They claim that the boiler fuel oil has better lubricating qualities.

It is therefore expected that with the added refinements to the system on the Clackamas, as described above, some new records will be set for continuous operation, low fuel cost and minimum maintenance.



STANDARD OIL COMPANY CONVERTS

Big Steam Tankers J. A. Moffett, Jr., and E. T. Bedford Being Changed to Diesel Drive

THE Standard Oil Company (N. J.) has recently placed orders with two East Coast shipyards for the conversion of two 15,000-ton twin screw, steam driven tankers to diesel drive. Though we have no official knowledge as to the actual cost of the conversion, it is our understanding that about \$1,300,000 is to be expended on the two vessels, the conversion being more or less in the nature of an experiment by the Standard Oil Company (N. J.) to develop not alone the manufacture of diesel machinery in American yards but also to secure actual comparative data concerning the cost of operating American diesel tankers versus steam tankers.

These vessels, the E. T. Bedford and J. A. Moffett, Jr., were built by the Federal Shipbuilding and Dry Dock Company, at Kearny, New Jersey, and completed about the middle of 1921. They are of steel, built on the Isherwood longitudinal system, and of 15,300 tons deadweight, being 516 feet 6 inches long, 68 feet beam, with a moulded depth of 30 feet 10¼ inches, and a draft on summer freeboard of 28 feet. At the present time they are each equipped with triple expansion steam engines capable of developing a total of about 3500 indicated horsepower, the vessels maintaining a speed of about 11 knots on this power.

Contract for the installation of diesel machinery in the steamer E. T. Bedford has been awarded to the Federal Shipbuilding and Dry Dock Company, Kearny, New Jersey, builders of the vessel, who are to install two 2-cycle propelling units manufactured by the Busch-Sulzer Bros. Diesel Engine Company, of St. Louis, Missouri, each unit having the following characteristics:

Power, 1500 S. H. P. at 90 R. P. M.
Type, 2-cycle, single-acting.
Number of cylinders, four (4).
Bore and stroke, 30 in. x 42 in.
Total fuel consumption per day, 69 tons.

Total lubricating oil consumption per day, 13 gals.

It is expected that a sea speed of 11 knots can easily be maintained with these motors installed.

The main auxiliaries will consist of one diesel engine of about 300 shaft horse power, driving an auxil-



The steam tanker J. A. Moffett, Jr., 15,300-tons deadweight, now being converted at the Tietjen & Lang plant of the Todd Shipyards Corporation to diesel drive, with two engines of the M. A. N. type, manufactured by the Hooven, Owens, Rentschler Co. of Hamilton, Ohio. A sister ship, the E. T. Bedford, is being converted at the Federal Shipbuilding & Drydock Co., Kearny, New Jersey, with two Sulzer type engines, supplied by the Busch-Sulzer Bros. Diesel Engine Co., St. Louis, Missouri.

iary compressor sufficiently large to operate one main motor at full load, including the maneuvering air necessary for that motor and also driving a 100 kilowatt generator, these two units being attached to the diesel engine by means of magnetic clutches, making it possible to operate them independently or simultaneously. There will also be installed, for port use, two 75 shaft horsepower diesel motors each driving a 50 kilowatt generator.

All engine room machinery, including steering gear, will be electrically operated, the only steam pumps installed in machinery space being for emergency use.

The cargo pumps will remain as at present and be steam driven, the steam being supplied by two Babcock & Wilcox boilers, each having about 1600 square feet of heating surface and constructed to operate on 250 pounds per square inch, supplying steam at 100 degrees superheat.

The steamship J. A. Moffett, Jr., is to be converted to diesel drive by the Tietjen & Lang Plant, Hoboken, New Jersey, of the Todd Shipyards Corporation. This vessel is to be equipped with M. A. N. main propelling units and auxiliaries, the equipment being manufactured by the Hooven, Owens, Rentschler Company of Hamilton, Ohio.

Definite dimensions of these engines have not as yet been decided upon but they will probably be similar in size to the Busch-Sulzer motors, and in any case will be 2-

cycle, single-acting motors capable of developing not less than 1500 shaft horsepower at 90 revolutions per minute.

It is not proposed to use the donkey boilers except for discharging cargo or/and ballast, heating of the fuel oil, quarters and engine room space being taken care of by a small Cochrans type vertical boiler installed in the lower engine room in a gas-tight compartment, where it is easily accessible to the engineers and oilers who will look after the operation of this equipment, and by this means it will be unnecessary to carry firemen.

It is interesting to note from the general arrangement plan shown herewith that the fuel oil tanks, lubricating tanks, donkey boiler and other spaces, where the collection of gases might become a danger, have been enclosed in gas-tight compartments, thoroughly ventilated. It is also interesting to see what careful thought has been given to the ventilation of the entire engine room space in order to eliminate the accumulation of obnoxious or dangerous gases.

The Standard Oil Company (N. J.), due to its vast experiences in handling diesel-driven tankers, has come to appreciate the absolute necessity of supplying clean lubricating oil to the motors and has consequently given very serious and careful thought to the lubricating oil system. In the March issue *Pacific Marine Review* will publish a schematic diagram showing the

THE MATSON LINE'S STORE DEPARTMENT

A Service of Supply

By A. C. HUSTLER,

Storekeeper, Matson Navigation Company, San Francisco

ON June 1, 1924, the Matson Navigation Company of San Francisco started to organize a store department or the Service of Supply.

We call it the service of supply for the reason that the store department is the medium through which all departments receive their supplies, its duty being to receive, tally, care for, and disburse such materials as come under its jurisdiction.

To receive and tally means to see that the company gets what it orders as to quantity and quality. To care for means to see that perishable materials are not exposed to dampness, rust, or any other deteriorating agencies, and to keep old stock moving out first. Distribution means to see that materials are supplied where needed in such quantities as are actually required and not what is wanted, as we find that the users of material are prone to order in excess.

Next in importance comes the care of surplus, obsolete, and scrap materials. These three items are very important and require constant and careful study on the part of the storekeeper in order that the material investments in these classes are kept moving. Surplus and obsolete materials are removed from ships; the ships are given the proper credit, and the value is then taken into store accounts. The surplus material is reissued to other ships on properly approved requisitions. Obsolete and scrap materials are sold to the best advantage, and the ships are likewise credited.

The store organization makes it possible for the purchasing agent to request bids on supplies. It also enables him to buy such materials as boiled oil, raw oil, turpentine, and denatured alcohol in bulk. When this class of material is received at the storeroom it is drawn off into half-gallon, gallon, and five-gallon containers, labeled and sealed, ready to be supplied on request. This also serves to reduce purchases, which in turn reduces the approving and vouchering of many purchase bills. Heretofore the vouching for receipt of materials and approval of purchase bills have been performed by the operating departments. These duties are now automatically assumed by the service of supplies.



A corner in the storeroom of the Service of Supply of the Matson Navigation Company, San Francisco.

Other savings effected through the service of supply are: culled dishes turned in from passenger ships are reissued to freight ships; old carpets turned in from passenger ships are made into carpet rugs at a small cost; empty bottles returned are sold; empty coal sacks are returned for credit; empty containers such as oil barrels and others, are returned for credit.

It is a fact that the general users of supplies lose sight of the money values these represent. We see a piece of material which meant an original expenditure of, say, \$10 lying around unused. In most cases the average employe is prone to pass

it by with little or no thought as to the actual cash value involved. On the other hand, if a ten-dollar bill lay there in the place of the material, he would at once recover it and return it to the company's treasury.

The time has come when we should all educate ourselves fully to realize that supplies represent actual cash and should be conserved to the fullest extent. Money in the treasury is zealously guarded, but when converted into materials and supplies is not given the same thought or care. Material is money in another form, the chief difference being that one depreciates and becomes obsolete, while the other does not.

A Busy Diesel Shop

WORKBOATS must have engines, and judging from the number of these being turned out by the Atlas-Imperial Engine Company, a lot of new boats are coming on the market as old engines are being replaced. During the past month, 27 sets of diesels have been sent out of the Atlas-Imperial shops at Oakland. Of these, two sets of 65 horsepower were for Crowley, and one 250 horsepower for Healy-Tibbitts Company. Many of the others went far afield, some to Africa, others to the Northwest and the Orient.

A look through the company's shops shows that still more and more of these sturdy power plants are coming along. A Pacific Marine Review representative the other day noticed five sets on the test block at one time, with several more waiting their turn. All must be tested and found perfect before shipment.

The factory as a whole gives one the impression of busy and efficient work, and in spite of the speed with which these engines are built, they are built well. The writer saw several of the old-time mechanics on the floor.

PORT AND CITY PLANNING

A Discussion of Some Problems in Port and City Planning with Particular Reference to Passenger Accommodations at Steamship Docks

IN a paper before the Society of Terminal Engineers, Roy S. MacElwee, commissioner of Foreign Trade and Port Development for Charleston, South Carolina, pointed out that port layout and planning should be inseparable from the general problem of city planning. A port city cannot be planned or zoned without consideration of its port problems, otherwise, the future growth of the city or the port, or both, will be hampered. We are here giving an abstract of Mr. MacElwee's chapter on "Benefits to the Public," the consideration of which seems to have been overlooked by most ports in our own and other maritime countries.

In a great many ports there is no effort made to connect the passenger ship and the railroad and there is no effort made to provide special accommodations for passengers. At most of our ports, passengers are "dumped" out with their baggage on a dirty pier deck, among ill-smelling cargo, and in the most inaccessible places on the water front. There is even inadequate provision made for taxicabs. New York is named as an example of a port where the entire procedure of clearing passengers is a general hit-or-miss affair with no regard whatsoever to the psychological effect upon visitors to that city or our shores. An opportunity for civic and national advertising by creating a favorable first impression is completely overlooked.

At Havre, France, in the basins used by the French Line, the passenger landing is as thoroughly equipped as a modern railroad terminal. The principal or second deck of the transit shed has a wide promenade for visitors parallel with the ship. The interior of the the same deck is fitted with rest rooms, waiting rooms, restaurants, telegraph stations, travelers' aid rooms, and all of those other appointments for the comfort of the public. The ground floor of the transit shed is a train shed and quick dispatch is given to passengers and their baggage. Several European ports that are gateways to large interior cities are so equipped.

The passenger landing or railroad station is the front door to a city; it gives the first impression of the city to a visitor; it should, therefore, become a municipal enterprise to make that gateway as attractive and comfortable as possible, and this is where the subject is brought into the realm of city planning. The solution of the difficulty is a large, union steamship passenger landing at which all steamships will land at least their cabin passengers before going to their freight wharves to discharge and load cargo and supplies, and discharge third-class and steerage passengers through the immigration station.

The ports of Liverpool, Hamburg, Antwerp, Cuxhafen, and other smaller European ports have adopted this system. Due to the great tidal variations at Liverpool, the passenger landing is built on a series of pontoons or floats connected with the shore by long ramps. All passenger steamships go to this landing stage, which is fitted out to take care of passengers and their baggage, and nothing else, and with all of the equipment necessary. To reach the trains it is only a short distance across the ramps to the quays.

In American ports, like New York or San Francisco, where the passengers are not immediately in transit to interior cities a large passenger landing terminal

should be located at a proper position with regard to the hotel district and the railroad stations, and so planned as to facilitate docking and get away. It should be centrally located and near the hotel district and the railroad stations. It should have a large parking space, with street car connections and taxicab accommodations, radial streets for rapid automobile traffic, and should be designed and located with due regard to city planning and architectural effects in keeping with the size and importance of the city.

SUPER RADIO FOR MARE ISLAND

SUPER power in radio, as it has become familiar to broadcast listeners, will be dwarfed by the 80 kilowatt vacuum tube transmitter, for which the United States Navy Department has just placed an order with the radio department of the General Electric Company. The transmitter will not be for telephone use, but for telegraph code communication only, at speeds up to one hundred words per minute, about twice as fast as the average conversational speech. It will be used to carry on the routine business of not only the Navy Department, but other departments of the Government as well. From its intended location at Mare Island, California, it will communicate direct with the Navy's high power station at Annapolis, Maryland, with the Hawaiian Islands, with Japan and with other countries, and battleships and destroyers practically anywhere on the Pacific. It will be the most powerful vacuum tube transmitter in the United States, if not in the world.

The 80 kilowatt tube transmitter is of the latest type, using a 6 phase vacuum tube rectifier to furnish direct current power at 15,000 volts, 7.5 amperes for the plates of the oscillator and amplifier tubes. The rectifier operates from ordinary commercial 60 cycle, 3 phase power. This alternating current is first stepped up to a high voltage by means of a transformer and then, passing through the six kenotron tubes, is converted to direct current power. A suitable filter, consisting of condensers and a reactor, is used to smooth out the ripple in the rectified current. For the transmitter proper, the master oscillator power amplifier circuit is used in conjunction with a tank circuit to insure the elimination of harmonics from the radiated output. The master oscillator uses a single tube, which generates the radio frequency power. This power is then fed into the power amplifier, which consists of several pairs of "push-pull" units operating in parallel.

The tube transmitter operates on a wave length of approximately 10,500 meters, so that it will not interfere with any of the local broadcasting stations and can be in use continuously without affecting receiving sets tuned in for evening entertainment.

The tubes used are the 20 kilowatt metal-type water-cooled, known as Rediotron, Model U. V.-207. This tube was developed in the Research Laboratory of the General Electric Company.

Along with the 80 kilowatt transmitter for Mare Island, the Navy has ordered a 20 kilowatt vacuum tube transmitter for Fort Brown, Brownsville, Texas. Up to the present time, this is the largest size of tube transmitter in regular commercial operation in the United States.

THE GYRO-COMPASS ON THE WORLD'S LARGEST TRAIN FERRY

THE transcontinental trains and the North Pacific Coast trains of the Southern Pacific Company, running out of San Francisco on the northerly routes, cross Carquinez Straits, an arm of San Francisco Bay, from Martinez to Port Costa, on train ferries which are said to be the largest of their kind in the world.

Carquinez Straits at this point are only three-quarters of a mile wide, but frequently this portion of San Francisco Bay is enveloped in a dense fog due to the fact that the fogs from the ocean and the black land or tule fog from the lower San Joaquin and Sacramento valleys frequently meet at this point. The navigation of these straits is also subject to strong tidal currents. It is necessary, therefore, frequently to navigate this short passage by compass, and there has always been some difficulty due to lag and sluggish action of the magnetic compass. Upon introduction of steel coaches on passenger trains, these effects on the magnetic compass were so magnified that under some conditions of loading of passenger trains on the ferries the magnetic compass became practically useless. It was therefore decided to try out the Sperry gyro-compass equipment on the Contra Costa.

The Contra Costa is 437 feet long by 118 feet beam, with four tracks. She frequently carries three large locomotives and 22 steel coaches on



Close-up in the pilot house of the Southern Pacific train ferry Contra Costa, showing Sperry gyro-repeater and the master gyro-compass.

a trip. Under this condition of loading the magnetic compasses have been observed to change as much as 56 degrees from the light to the loaded ship. The condition of loading has no effect on the gyro-compass.

It was found that the Sperry gyro-compass enabled the master to set his course irrespective of fog and make the swing from one slip to the other with very much less delay than had formerly been experienced.

Previous to the installation of the

gyro, much time was lost on foggy days in splitting up the trains and arranging them on the ferry so as to produce the least effect on the magnetic compass. On occasions this change had been so marked that the ferry had actually to make two trips for one train. With the gyro-compass installed they load the ferry to its capacity, regardless of weather and save many extra trips.

The Southern Pacific Company has now on this showing equipped all of the train ferries on this route with the gyro equipment. The navigating officers are enthusiastic in praise of this equipment because it is so sensitive in its response that it shows exactly the swing of the ship and enables them to steady the ship just before entering the slip, thus often saving them from getting jammed sideways in the entrance. Since these slips are upward of 1000 feet in length, the jamming of the heavy ferries at the entrance was formerly the cause not only of great delay but also of great damage to slips and ferries. Now the little gyro in the pilot house irons out all these difficulties, and the train ferries weave back and forth across Carquinez Straits on perfect schedule.



View of Carquinez Straits, the Contra Costa in mid stream, the Solano alongside the slip.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

INTERNATIONAL WORKBOATING

SEVERAL years ago there was quite a fleet of steamers operating under the Mexican flag known as the National Navigation Company. There were seven vessels of from 600 to 1200 tons, besides several smaller craft. But the country went all awry after ex-President Porfirio Diaz died, and was torn by revolution until the business of steamboating about played out. About ten years ago, an effort was made to keep two of the boats going by placing them under the American flag. George W. Beermaker of San Diego was appointed manager at this end, and prospects looked fair. But freights were light and the venture fell through and the steamers were sold. Mr. Beermaker, though, did not feel like quitting, so he obtained possession of the motor vessel Gryme, then in British Columbia.

The Gryme was formerly the American gas boat Edrie, of 111 tons, built of wood in 1907 at Decatur, Washington, and powered with a 110-horsepower gas engine. She was used as a halibut bark tender, but became involved with the fisheries laws and was seized by the Canadian government. Later she was sold in Vancouver and renamed the Gryme. Mr. Beermaker bought her in 1915 and put her in the Mexican coast trade out of San Diego.



View at the San Diego plant, Campbell Machine Company, showing three 65 feet long by 16 feet beam fishing boats on the ways.

In 1922 the old gas engine was taken out, as it was too expensive to operate, and an Adams diesel of 160 horsepower put in. With this plant she is doing very well, and her owner had worked up quite a trade. Mr. Beermaker contemplates getting a larger vessel in the near future, but says it will have to be powered with a diesel, as steam for a medium sized craft is out of the question.

Besides operating the Gryme, Mr. Beermaker handles customs and ship broker matters together with Mexican business of a general nature,

his familiarity with the country and language being of advantage. There is no doubt but what there will be a good line of motor vessels running under his control as the Mexican business increases.

DIESEL SAVINGS

A VERY decided proof of the saving of diesel propulsion over steam has just been shown by the performance of the Alaska Packers' motor tug Alitak. This vessel originally had a 250 horsepower compound engine, which was replaced last spring by an Atlas-Imperial diesel of the same power. She has lately returned from the season's work in Alaskan waters and needs no engine repairs whatever.

During the summer she has covered 11,264 miles in 1773 hours, consuming 20,362 gallons of fuel oil. When a steamer, during the equivalent time and making materially less speed, she used 553 tons of coal. This latter, at \$10 per ton, compared with her fuel for the diesel engine at \$0.29, totals only \$590.49, showing a cash saving of about \$5000 in less than six months' operation. This remarkable result is all the more noticeable as the owner company has kept close records of costs in the past.



The steam yacht Imperial, which has recently been converted to diesel drive with an Atlas-Imperial diesel engine. A short account of the savings affected will be found on page 64 of this issue of Pacific Marine Review.

ANOTHER NELSECO TUGBOAT

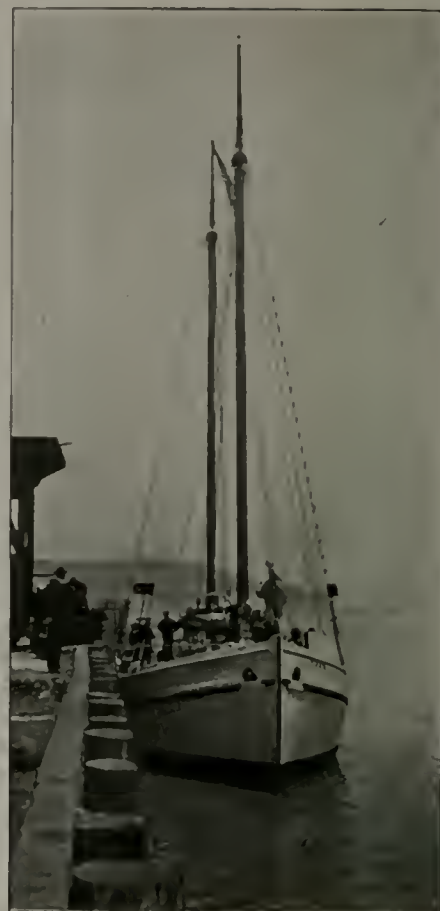
LOUIS O'DONNELL, of 44 Whitehall street, New York City, recently placed an order with the New London Ship and Engine Company for a 300 shaft horsepower, 6-cylinder, 4-cycle, direct reversible Nelseco engine for installation in his tugboat James M. Brooks. The engine is to be of the latest type and will be direct-connected to the propeller. Auxiliary equipment for heating, lighting, and running the various pumps necessary for tugboat operation is to be installed, and it is anticipated that these auxiliaries will represent a most simplified method of drive.

A large fuel oil capacity will be carried, which will enable the tug to make the trip from New York to Buffalo with a single fueling. This will eliminate the considerable delay of taking on coal, which is necessary with all steamboats operating on the New York State Barge Canal. It will also enable the owners to benefit by the low fuel costs which prevail at New York harbor.

The engine and boiler of the James M. Brooks are now being removed at Bushey's Shipyard, Brooklyn, who will also install the fuel tanks and miscellaneous foundations and auxiliary equipment. The tug will then probably be towed to New London and the installation of the

main engine and piping will be effected. The conversion of the tugboat will probably occur around May 1 and she will be ready for the opening of the barge canal.

Louis O'Donnell is prominent in the lighterage and towboat industry in New York harbor and on the old Erie Canal. Last season he and his associates operated the steam tug Louis O'Donnell, as well as one chartered boat. This season, after recognizing the many advantages of diesel engine operation and investigating the various makes of engines on the market, they have decided to effect. Delivery of the completed install a Nelseco engine in the James M. Brooks, and benefit by the reduced fuel costs, elimination of firemen and the frequent visits to coal docks. Needless to say, this new diesel towboat will attract great attention on the canal and contribute, to a large extent, towards convincing the canal boat owner that he must install diesel engines or accept the alternative of operating under a severe handicap. The James M. Brooks is a tug of 77 feet overall, 20 feet beam, and will draw, after conversion, between 8 and 9 feet of water. She was built in 1920 and is considered by the owners remarkably well suited for canal towing.



The Union Fish Company power schooner Pirate at the old Howard street wharf, San Francisco.

CLOVERLEAF EFFICIENCY

THE power schooner Pirate of the Union Fish Company has recently been equipped with a Cloverleaf propeller and has shown excellent results.

The Pirate is 65 feet long by 22 feet beam and has an 80 horsepower Union gas engine of the 3-cylinder type.

Her usual run is from Sand Point to Pirate Cove and return in the Shumagin Islands, Alaska. This trip formerly averaged 20 hours, but with the Cloverleaf propeller is now made in 13 hours and 40 minutes.

Savings amount to 33 per cent in boat time and 40 per cent in fuel per trip. The picture shows her laying at the old Howard street wharf, San Francisco, preparing for her first trip to Alaska. She was built at the Alameda yard of F. W. Stone & Son in 1914.



ANOTHER CONVERT TO DIESEL DRIVE.

Old timers on the Pacific will note with considerable interest that the motorship Ambassador, powered with a Nelseco diesel engine, and formerly owned by the Chicago & North Western Company of Alaska, has now become through purchase the property of the Inter-Island Steam Navigation Company of Honolulu. The Ambassador made the long trip from Seattle to Honolulu under her own power with no trouble of any kind in the engine room, and the owners of the Inter-Island Steam Navigation Company have expressed great satisfaction over the performance of this diesel power plant.

FROM WHITEHALLS TO OCEAN FREIGHTERS

AMONG the first of the workboat operators of the Pacific Coast stands the name of Thomas Crowley. "Tom," as he is fondly called by a host of friends, is a San Francisco boy, born in 1875 down where the old seawall once was. His playground as a youth was around the Whitehall boats which the elder Crowley operated. After his grammar school days, in 1890 he became active in the work of boating on the waterfront, his energetic manner and business ways winning many a dollar. Early he saw the advantage of engine-driven boats over man propelled, and the old Jennie C., with a 20 horsepower gas engine, was the first one of the Crowley fleet. From this start a steady growth was made, until today there are some sixty craft operating under the Crowley name.

Probably Mr. Crowley is the only man who has built from the little single-cylinder gas boat of 20 horsepower to a number of ocean-going steamers. He did not stop at workboats, but branched out into ocean freight carrying, and has several good sized coasters under his flag. Besides this the Crowley yard in Oakland is fitted to handle extensive repairs, not only on the smaller craft, but on larger ones as well. But to the workboat Mr. Crowley gives all the credit of his success. Besides the interests above mentioned, Mr. Crowley has a big slice in the ownership of the Red Stack tugboat fleet, but his attention is never far from the sturdy little workboats and their operation.

When he first entered the field of tugboats, he bought the old Hercules and the Buhner. These were changed into oil burners, and for a time opposed the Red Stacks. A coalition of interests resulted, and this accounts for the tugboat branch of the business. The Crowley yard at Oakland was started ten years ago to take care of the repairs on his fleet of workboats and barges, and has increased to the point where bids are made for repairs on the largest vessels. Well appointed machine shop, carpenter shop, and ways, smith shop, etc., give a plant well able to deliver the goods on any ordinary job.

In a chat with Crowley, a Pacific Marine Review representative found it hard to get Tom to say much about himself. Mostly he gave the credit for his extensive business to his brothers, Dave and John, and to



The Crowleys of San Francisco Bay.

Jimmy Sinnott, Willy Figari and Walter Westman. To the loyalty and help of this quintette he believes is due much of the fine work of the Crowley Launch & Tugboat Company, as well as its subsidiaries. However, in reply to a question as to his opinion of the future propulsion of workboats, Mr. Crowley became enthusiastic in favor of the diesel-electric drive. "At present they are costly," he said, "but I believe that engineering science and experiment will later produce an electric motor, diesel-generator drive that will be reasonably priced and economically operated. Such an arrangement is ideal for a workboat. It can be easily controlled by one man, and is flexible, as the power can be changed instantly from the slowest speed of propeller to the utmost output, reversing at will and at the touch of a finger—this all done from the pilot house or at other points of the boat, at the will of the operator. The diesel will run steadily, responsive at once to any and all calls on it. It will use the very least quantity of fuel while 'idling' and the workboat handler will always know that he has things well in control, no matter how tight the place he is in. We have seen the remarkable development of other lines, like the automobile, and there is no reason why the workboat needs should not be met. Already we have diesels coming to the front and displacing the old style 'gas' boats.

The next step will be along the lines I am speaking of, and I predict that in a short time the ideas of today will be concrete facts of tomorrow. The tremendous field for small, high-powered tugs or workboats has as yet not been fully exploited. There are many opportunities where these craft could be used at an advantage to the operator and of benefit to commerce as well. Take, for instance, the concentration of products from various small ports not physically practical for entrance of large vessels. The small craft, cheaply operated, can enter these places, pick up a jag of freight, and carry it to a central larger port. There it can be handled in heavier vessels, and ultimately economically carried from producer to consumer. In this way lands now unproductive because of high transportation costs would become exporters, and the world wealth would increase."

If some of these newly-designed workboats get to be much larger and more highly powered they will soon enter the ocean steamer class. A few years ago there would be a captain, an engineer, a mate, two deck hands, two firemen, a cook and a boy to run a steam workboat. Nine to run a 200 horsepower tug, and now a diesel-powered craft will do almost the same work with only one man to handle all, and fuel expense about one-fifth. And the end is not yet. Watch the diesel-electric drive.

STEAM TRAWLER CONVERTED TO DIESEL

By DAVID W. DICKIE

THE Standard Fisheries Company of San Francisco operates a number of trawlers for ocean fishing outside of San Francisco Bay. Among these is the E. Antoni, a steam vessel of 47 tons gross register, 26 tons net, and with the following general characteristics:

Length over-all	75.8 ft.
Tonnage length	72.8 ft.
Registered length	69.5 ft.
Beam	19.4 ft.
Depth of hold	7.0 ft.
Steam Boiler and engine, H. P.	175



The Diesel trawler E. Antoni at her berth, San Francisco.

This vessel was built by M. Pasquinucci at Sausalito, California, in 1914. Quite recently Matteo Martinielli, manager of the Standard Fisheries Company, persuaded his associates that they could save a large amount of space and considerable operating expense by changing the vessel to diesel drive. At the same time it was determined to rearrange the house and the decks, so as to reduce the measurement to sixteen tons net.

The conversion of this vessel was completed at the yard of Bagley & Nunes Company, Oakland, the Western Machinery Company installing one of their Western-Enterprise diesel engines, Ets-Hokin & Galvan installing the electric light plant, and the Standard Machine Company installing the trawling winch. All work was performed under the supervision of David W. Dickie as naval architect for the Standard Fisheries Company. As the work on this vessel presents a rather difficult condition for diesel engine operation, it is thought that a description of the conversion and of the trials will be of interest to the owners of deep sea fishing boats.

On test in the shop, the engine showed the following results:

Load on brake	520	540	560	560
Revolutions per minute	294.5	296.7	295.2	302.6
Horsepower	153.2	160.25	165.25	175.6
Fuel per hour pounds	54.5	52.72	53.8	60.08
Fuel per horsepower hour	.365	.329	.3255	.3421
Gallons per hour	7.382	7.145	7.29	8.139
Horsepower per gallon	20.75	22.44	22.68	21.58
Maximum pressure in cylinder	504	502	503	517

During this test compression pressure varied between 380 and 400 pounds. The maximum pressures developed during this test were well within safe limits, as this engine is designed for 550 pounds pressure per square inch.

It is usually found in replacing steam or gasoline engines with marine type diesel engines that there is difficulty on wooden vessels getting room between the top of the keelson and the center line of the old shaft. On a number of installations of this character, owners have been led to believe that it was all right to cut away the top of the keelson without additional

strengthening in way of the engine bedplate, and these owners have subsequently suffered financial loss and much disturbance to their peace of mind. It has come to be standard practice either to rebore the shaft log at a sharper angle or to put in a new shaft log. On the E. Antoni it was possible to rebore, resulting in a very excellent job after the shaft log and the stern post had been refastened. New engine timbers connected onto the shaft log were installed and the central work of the hull in the way of the engine was entirely refastened.

When the fastenings were removed for examination of the hull, it was found to be in excellent condition both as to soundness of the wood and as to metal fastenings.

In making the change to diesel, considerable additional space became available forward and a large forecastle was installed, fitted with pipe berths, lockers, and dining table for the crew. The deckhouse is arranged with the pilot house forward, the galley and a net room in the center, and the engine hatch at the after end, the fish hold being aft of the deckhouse. The net room is an innovation. It is arranged to hold three nets and keep them dry when not in use.

One of the problems in connection with trawling is that houses on the fishing boats are not built with sufficient fastenings to prop-



The Diesel trawler E. Antoni out on the ways for conversion to diesel. Left—stern view showing old rudder. Center—broadside view. Right—stern view after reboring and refastening shaft log and hanging new rudder.

erly take care of the strain of handling the net. The winches are built into the house and driven from the main engine. The net weighs in the neighborhood of 15,000 pounds and when it hangs on the gypsy of the winch as the boat is rolling, often through a total angle of 30 degrees, a surging strain is brought to bear on the house in a vertical direction, and it is found that on the majority of the vessels in the fishing fleet the seams of the house open under this strain. To overcome this defect, the new house on the E. Antoni was built solid 5½ inches thick, edge fastened, and in way of the winch has a plate fitted outside and inside and through bolted to distribute the winch strains.

One important advantage gained by the conversion on this particular job is that the E. Antoni now has a freeboard of 24 inches, so that even with considerable list to port or starboard she always has the necessary 18 inches freeboard at the roller when the fish are being scooped out to lighten the net, and also she is always perfectly dry on deck when at sea.

Main Engine

The Western-Enterprise engine installed in the E. Antoni is a 4-cylinder, 10½-inch by 15-inch, solid injection, full diesel engine, rated 165 horsepower at 208 revolutions a minute. This is connected to the propeller shaft by a Western-Enterprise clutch and has a reverse gear fitted.



The starting air unit, manufactured and supplied to the E. Antoni by the Standard Machine Company of San Francisco.

Since conversion the E. Antoni has shown her heels to the entire fishing fleet. On measured mile at 272 revolutions a minute her observed speed was 9.11 knots and at 310 revolutions a minute 9.54 knots. There is no vibration apparent except at one critical speed.

The regular every-day cycle of work of the E. Antoni from anchorage grounds at Pt. Reyes to the fishing grounds is 1 hour 15 minutes, full speed to the fishing grounds 9½ to 10 hours, at less than half speed of engine (152 revolutions a minute) while making three drags with the trawling net; then 1 hour and 15 minutes at full speed back to the anchorage, where the catch is delivered to the market boat.

On the Western-Enterprise engine the governor sets the timing to suit the speed of the engine, and this apparently minimizes valve trouble. On her trials and in her regular work in operation, the engine is working continuously and functioning perfectly.

Arrangements are made on the switchboard by Ets-Hokin & Galvin to take care of the difference in voltage caused by the fact that the generator furnishing electricity for the lights is driven off the main engines, and so is also subject to lowered speed during the trawling operation.

It is very important with a diesel engine installation, and especially so at sea, to have a dependable source of compressed air for starting purposes. On the E. Antoni this need is met by an auxiliary gasoline engine driven compressor, which is made in San Francisco by the Standard Machine Company. A. Barletta, president. This unit has an ability to deliver air at 350 pounds pressure, with a capacity of 20 cubic feet per minute, and will give starting air in six minutes. It is a compact, well designed unit of 550 pounds net weight.



Five views taken on the E. Antoni on the fishing grounds showing progressive positions of the trawling net as it is hauled in with the catch.

LUBRICATION ON SHIPBOARD

An Open Forum—Questions on Lubrication Problems Are Invited; They Will Be Answered in Order of Receipt Through the Co-operation of the Associated Oil Company's Staff of Lubrication Engineers

INSTALLMENT No. 8

The page, Lubrication on Shipboard, is becoming a scientific engineering service to ship operators. Send us your problems and we will find the solution. Proper lubrication is one of the most important factors in efficient operation at sea or on shore, and it enters into every relation of mechanisms in transportation in industry in life itself. This installment treats of GRAPHITE, of OPEN GEARS ON DECK, of ANCHOR CHAINS, and of STEAM INDICATORS.

Question No. 37.—What is the difference between ordinary flake graphite and dislocated graphite?

Answer.—Graphite is classified as a solid lubricant. Graphite is often called plumbago and is a metallic substance, established by chemical research as almost pure carbon. Graphite in its native state comes in two forms—flake and amorphous. The flake graphite is a lustrous solid lubricant; the amorphous graphite is dull in appearance.

The principal supplies of known graphite are widely distributed, commercial quantities coming from the United States, England, Canada, Mexico, Japan, Bavaria, Ceylon, Italy, Austria, Madagascar, and Siberia.

The specific gravity of native graphite is 2.2 and it cannot be permanently suspended in oil. Native graphite is obtained by mining, and it is largely associated with impurities such as ferric oxides, silica, mica, and talc, and has to be purified by chemical or mechanical methods. The flake graphite is the familiar form sold to the trade and this product is further reduced by a grinding process which reduces it to a very fine powder. When added to oil, graphite, owing to its greater specific gravity, settles to the bottom, and for this reason should never be used in sight feed oil cups, or hydro-static lubricators, or in wick feed cups.

The use of graphite in steam cylinders can be overdone, and when used at all it should be introduced into the steam pipes through a hand operated pump provided with an atomizer to insure its distribution by the velocity of the passing steam. Graphite is not attacked by acids or alkalis and is not susceptible to changes in temperature. It is a good conductor of electricity and cannot be carbonized or vaporized.

As a dry lubricant to eliminate wood to wood friction, it is without equal. When embodied in a grease, it forms a convenient form of application and is extensively used in the automotive and many other industries. The great value of graphite as a lubricant is demonstrated by its ability to fill up small cavities and holes or tool marks found on bearings and in steam engine cylinders and so provide a polished surface for the hydrocarbon oils to work on.

Owing to its quality of not being affected by heat, it is often employed to good advantage in small quantities in superheated steam cylinders. Too much graphite employed will find its way in the course of time to the back of the piston rings and it will pack into a hard substance, which will fill up the grooves in the piston and will retard the natural spring in the piston rings. In bearings, graphite tends to fill up the oil grooves.

Dislocated graphite is an artificial product discovered and introduced by Dr. A. Hanson. It is produced as a by-product in electric furnaces and is almost chemically pure graphite. Dr. Hanson discovered a way to treat this graphite with tannic acid, getting it into water, which imparts a peculiarity not possessed by native graphite in that it will remain suspended in fluids. This product is then called dislocated graphite and after allowing a while it is passed through a coarse filter, under vacuum, which extracts most of the free water and leaves a very fine residue. This paste is later incorporated with mineral oil and sold under familiar trade names. It is used for lubrication on both steam and internal combustion engines and for other purposes, and owing

to its faculty of remaining suspended, can be used where ordinary graphite would not perform.

Question No. 38.—The gears on the deck machinery make a terrible racket and the application of cup greases does not have any effect and besides it fouls up the deck with what is thrown off. What sort of grease can we put on to correct this trouble?

Answer.—The successful lubrication of open gears, such as are found on deck machinery, anchor hoists, etc., require a very viscous semi-fluid product, containing no soap filler. Cup greases are very unsatisfactory for this purpose for the above reason.

The best grease is a black, very sticky, semi-fluid oil, which when applied to the gears forms a pressure resisting film that remains under the most severe conditions. After using it, the teeth in the gear will present a dark copper colored appearance and the noise will be greatly reduced. Metal to metal friction will be almost eliminated. Some of these compounds have to be heated and applied with a brush, but for sea service the semi-fluid grades will be found to give the best results owing to the tendency of the stiff compounds to ball up and flake off when cold or exposed to rain or sea water.

Gear compounds must not be confused with black lubricating oils which are sold as winter and summer grades. Gear compounds should never be used as lubricants for any form of bearings or on the slides and guides of the crossheads.

Question No. 39.—What sort of oil can be used for anchor chains?

Answer.—Anchor chains cannot be successfully taken care of with lubricating oils or greases, and the use of these is not advocated. Red lead or black chain paint applied with a brush, after cleaning the surfaces of the metal with a steel wire brush, is the best method of preserving your chain. With oil or grease on your anchor chain, you would get into trouble with the harbor authorities.

Question No. 40.—On steam cylinder indicators, what kind of oil gives the best results?

Answer.—Most steam engine indicator manufacturers recommend Porpoise Jaw oil. Other names for similar oils are Dolphin Jaw oil and Melon oil.

These oils are all obtained from a lump of soft fat in the head of the fish and they are extracted by heat processes, after which the raw product is chilled and then pressed to eliminate the solid fat.

Porpoise Jaw oils are also used for oiling watches and scientific instruments, as these oils do not gum, and if properly refined will not become acid. On steam cylinders of steam indicators of late years, the use of a high grade pure mineral steam cylinder oil is recommended. Owing to the viscosity of the mineral oil, it sticks to the cylinder bore of the indicator and prevents pitting, and for lay-up purposes it cannot be improved upon when used in the cylinder.

For the lubrication of the pencil movement, light dynamo oil is recommended. No matter what oil is used before putting your indicator away, it should be thoroughly dried and cleaned and before starting to take cards the indicator should be thoroughly warmed up to reduce condensation and also to obtain free movement of the piston and motion.



Clipper ship overhauling merchantman, driving before northeast monsoon on the China Sea.
Painting by W. Francis.

HISTORY OF THE FAMOUS CLIPPER SHIP YOUNG AMERICA

By F. C. MATTHEWS

THE extreme clipper ship *Young America*, perhaps the finest sailing ship ever built, was for more than a quarter of a century the pride of the American mercantile marine. Her arrival in port was sure to attract a crowd to the city front to gaze on her beautiful proportions and discuss her wonderful performances. Many expressed a sentimental regret that she ever passed from American hands, and when she was sold felt the full force of Holmes' lines on "Old Ironsides":

"O, better that her shattered hulk
Should sink beneath the wave."

"Nail to the mast her holy flag,
Set every threadbare sail,
And give her to the god of storms,
The lightning and the gale."

It might be said that her name was not only a household word in all maritime cities, but also throughout the length and breadth of the nation.

Webb's Masterpiece

The *Young America* was launched on April 30, 1853, from the yard of William H. Webb, New York, and was the last clipper he built—his masterpiece as well as his favorite ship. Her keel was 239 feet 6 inches long; deck, 243 feet; extreme breadth of beam, 43 feet 2 inches; depth of hold, 26 feet 9 inches; draft, 22 feet. She was 1961 tons, old measurement; 1439 tons in 1865, and 1380 tons in 1883, according to changes made in the rules for computing tonnage. Her dead rise was 20 inches; her entrance and clearance lines were long and sharp. A billet took the place of a figurehead, the trail boards being ornamented with carvings of national emblems. The stern was elliptical in form and very graceful.

A poop deck 42 feet long contained cabins handsomely fitted up, affording sumptuous quarters for her captains, many of whom were always accompanied by

their wives, as also for a number of passengers, with whom she was a very popular ship. She had three complete decks; was diagonally braced with iron plates 5 feet by 3¾ inches, four feet apart, bolted at intersections, forming a massive network of iron and giving the utmost strength to her frame. That she was built of the best materials and by the most skilled mechanics is evidenced by the fact that she saw thirty years of the hardest service.

The *Young America* was one of the loftiest ships afloat, her trucks towering as high or even higher than clippers of larger tonnage, and she was also very heavily sparred. In her prime she swung a 104-foot main yard, while her spanker boom was 86 feet long. Under her original rig of single topsails, her whole complement was 75 men, of whom 4 were mates and 60 foremast hands. Her cost was \$140,000. She was built under the immediate supervision of Captain David S. Babcock, who had made the celebrated passage of 91 days from New York to San Francisco in 1852, in the clipper ship *Swordfish*, also built by Mr. Webb.

The *Young America* was always a favorite with shippers, commanding the highest freight rates; she was a veritable mint to her owners. On her maiden passage, New York to San Francisco, her freight list was \$86,400; in 1866 it was \$50,442, while that of the *Seminole*, a new ship on her maiden passage and a larger carrier, was \$45,369. She also proved to be a money-maker for friends and admirers, as her passages were the subject of betting for larger aggregate amounts than was the case with perhaps any dozen other ships, and she never failed to realize expectations. A single run from San Francisco to Liverpool is said to have netted her various backers as high as \$40,000. On her maiden passage her builder offered to wager \$20,000 that she would beat the *Sovereign of the Seas*, then in the zenith of her fame, in a race to San Francisco, but the latter went to England and

Australia, which was a matter of much regret to all interested.

First Run

The *Young America* left New York on her first voyage June 10, 1853, and made the run to San Francisco in 110 days, which was quite disappointing, especially when extraordinary sailing powers had been predicted for her. However, the fault did not lie in either ship or captain, for her log shows a woeful array of entries of calms and light winds, there being 33 days of 85 miles or under, several being under 30 miles. Of her first nineteen days at sea there were ten on which she made 70 miles or less and she was not up with the equator until the thirty-sixth day from port; then had somewhat better winds and passed Cape Horn on the sixty-seventh day. Making the Cape Horn passage in 8½ days, she had the excellent run of 18 days up the south Pacific and crossed the equator 88 days out, being only 52 days from a similar position in the Atlantic; was thence 22 days to destination. From San Francisco she went to Honolulu in 12 days, and after loading a cargo of whale oil made the run to New York in 96 days. Sailed again on July 2, 1854, and had many days of head winds to the line, which was crossed 26 days out; made the Cape Horn passage in 10 days, but was 27 days in the south Pacific and was not on the equator until the ninety-second day. Then had an excellent run of 18 days to San Francisco, especially fast considering the fact that very light winds were experienced the final five days. Her passage from New York was 110 days, the same as the previous year. She sailed from San Francisco November 18, 1854, and was 42 days to Hongkong, later proceeding to Shanghai. At that port the shipwrecked crew of the Russian frigate *Diana* bargained with Captain Babcock for passage on the *Young America*, but as he had no protection against a French schooner and frigate which he afterwards perceived, he was forced to reland the Russians, which was a fortunate escape for them, as the ship was subsequently boarded by a French officer. France and Russia were at war at that time. From Shanghai the *Young America* went to Manila, where she loaded for New York; sailed September 21, 1855, and made the run home in 101 days, being 73 days from Java Head.

Heavy Gales Off Horn

On her third voyage the *Young America* arrived at San Francisco July 14, 1856, 107 days from New York. Captain Babcock reported being 24 days to the line, 49 days to 50 degrees south. Had heavy gales off the Horn; while lying to on the night of May 18, she pitched into a sea which broke the jibboom into three pieces, stove bulwarks and did some minor damage on deck; she crossed the equator 80 days out and had light winds and calms the remaining 27 days.

The *Young America* sailed from San Francisco August 5, 1856, and was 44 days to Hongkong; took 800 Chinese coolies to Melbourne, thereafter proceeding to Singapore and Rangoon. Left the latter port July 31, 1857, and was in port at Mauritius September 3, arriving at Falmouth October 30, proceeding to Bremen to discharge. Then went to Liverpool and loaded for Melbourne. Sailed April 18, 1858, and arrived out June 20, a passage of 63 days, which is the record to the present time. From Melbourne she went to Singapore, sailed thence September 24; passed Anjer October 5 and the Cape of Good Hope on the 30th; arrived at New York in December, but exact length of passage is not ascertainable. Sailed from New York

January 30, 1859, Captain Nathaniel Brown, Jr., in command. Put into Rio March 18, having lost main-topmast, mizzen topgallantmast and all attached, in a gale. Repaired and sailed May 15; had heavy weather off the Platte, but good weather off the Horn; arrived at San Francisco July 24, 23 days from the equator, 70 days from Rio, 118 sailing days from New York. Completed this voyage by returning to New York direct in 100 days.

In the spring of 1860 she again went out to Melbourne and was 49 days thence to Callao, arriving September 20, Captain Carlisle being now in command. Sailed from Callao November 8 and arrived at Liverpool February 2, 1861; reached New York April 26, 39 days from London, 30 days from the Lizard; had head gales or calms all the passage, with the Sandy Hook pilot on board for four days.

The *Young America* returned to England and was the first vessel chartered from Europe for Oamaru, New Zealand; loaded at Glasgow, her cargo consisting of merchandise and live sheep. Sailed November 1 and arrived out February 2, 1862; was unsuccessful in first attempting to discharge her cargo and was forced to put to sea again with loss of anchor and chain and taking the beach-master, Captain Sewell, along. She later caught the ground at Lower Point and the steamer *Samson* was sent from Otago to render assistance, if required. The *Young America*, however, came off with but slight damage. On May 21 she was at Callao from New Zealand; sailed August 4, 1862, for Antwerp; put into Plymouth October 30, in distress, having, in a tornado in 9 south, 32 west, lost foretopmast, fore and main-topgallantmasts, had maintopsail yard sprung and being otherwise damaged. She was repaired and completed the passage, arriving at New York March 21, 1863, from Antwerp in ballast, being 32 days from Flushing.

Captain Jones assumed command of the *Young America* and she sailed from New York May 28 for San Francisco, arriving out September 22, 117 days' passage. Was 29 days to the line; 18 days making the Cape Horn passage in the face of strong westerly gales, during which boats and bulwarks were stove and a number of sails split; crossed the equator 86 days out and then had 31 days of light winds to port, being within 600 miles of the Golden Gate for 12 days. Sailed November 3 and was 125 days to Liverpool, the longest eastward passage she ever made. Arrived at New York May 14, 1864, 29 days from Liverpool, with merchandise and 250 passengers; had sailed under protest, the consul refusing to give up the ship's papers.

Captain George Cumming

Captain George Cumming, whose fine clipper ship *Winged Racer* had recently been captured and burned by the *Alabama* in the East Indies, now took the *Young America* and made the run to San Francisco in 120 days, arriving December 9, 1864; he reported being 28 days to the line; passed Cape Horn 58 days out; crossed the equator in 97 days and was 23 days thence to port.

Off Cape Horn spoke the ship *Andrew Jackson* (second), whose captain, Robinson, wished to be reported at San Francisco; the *Young America* reached port 34 days in the lead. Sailed from San Francisco January 14, 1865, and was 45 days to Hongkong, later proceeding to Manila. Left that port April 16; cleared Java Head May 18; passed the Cape of Good Hope June 10; crossed the line July 2 and took her pilot

off Barnegat July 23, being 65 days 12 hours from Java Head, one of the fastest passages recorded and only three days longer than the phenomenal run of the Sea Witch. Sailed from New York November 12, 1865; was 30 days to the line; passed Cape Horn 66 days out; had light winds in the South Pacific, not being up with the equator until the 100th day; south of the line sprung a bad leak and the pumps were kept continually going until arrival at San Francisco March 10, 1866, 117 days from New York. She had come up from the line in 17 days.

Sailing from San Francisco June 9, 1866, the Young America was 108 days to Liverpool, thence crossing to New York in November. Sailed from New York March 2, 1867; was 22 days to the line; crossed 50 south, 54 days out; was 19 days rounding the Horn in very heavy weather; was 25 days in the South Pacific, crossing the equator 97 days out; had trades to 20 north, when was in practically a dead calm for 10 days, this being followed by light winds to port. Arrived at San Francisco July 11, 130 days from New York. Sailed August 12, and was 99 days to New York. Left that port January 9, 1868, and crossed the line 19 days out; passed Pernambuco February 1, under 23 days out, and passed Cape Horn on the 54th day; was 12 days from 50 to 50 in very fine weather; crossed the equator 86 days out and received San Francisco pilot at 4 a. m. April 27, 109 days from New York. Sailed May 21 and was 109 days returning to that port, arriving September 8.

On Beam Ends in Whirlwind

Her outward passage to San Francisco in 1868 was momentous. Taking her departure from New York on October 23, she experienced a cyclone when three days out, from which, however, no damage was received. Crossed the line 29 days out and all went well until December 3, the ship being then off the Platte. At noon the barometer showed no sign of an approaching storm, although there was a heavy chop sea on, and Captain Cumming was not sufficiently satisfied with the general appearance of things as to warrant his leaving the deck. Without a moment's warning a whirlwind struck the ship and she swung off some 12 points, finally being taken aback and becoming unmanageable, lying over on beam ends. Captain Cumming ordered shrouds and stays cut away in the hope of saving the vessel; she had a full cargo of railroad iron and this was supposed to have shifted. Before the order could be executed, however, the gale shifted, carrying away the fore royalmast, main topgallantmast and cutting the mizzen down to the lower mast head. By this time everything aboard was in confusion. The passengers, which included Mrs. Cumming and her son, were picking themselves out from the piles of broken crockery in the cabin and the captain was the only cool man aboard. After four hours' duration the gale subsided, but the ugly cross seas continued throughout that day and night. When the sea went down, the full extent of the damage could be appreciated. Dismasted and laboring heavily, having taken on considerable water, the future seemed anything but bright. All hands turned to at the pumps and after a hard struggle the hold was cleared. Thanks to the skillful stowage of the New York stevedores, the cargo was found to be as solid and immovable as when it was put aboard.

Round the Horn Under Jury Rig

It would have been a simple matter to have made Rio, but in order to step a new mizzenmast it would be necessary to discharge the cargo, which, with re-

pairs at that port, would have meant the practical confiscation of the vessel. The standing rigging had kept the wreckage of spars alongside, and after careful consideration Captain Cumming decided to bring his ship around under a jury rig. Work was commenced and by December 9 the jury mizzenmast was completed and a four-reef "Big Ben" was bent.

On the 11th the wind came up very strong from the southwest, with an extremely high sea, and it looked as if the sticks would come out of her. It was then decided to cut the big sail down one reef, as it was too heavy to be easily handled. On the 15th the main-top and topgallant sails were sent up. On December 26 Cape Horn was passed in fine, clear weather and was in plain sight all day. Six days before they had had a gale which was the heaviest that the captain had ever experienced. From January 3 to 6, had strong winds and heavy seas, the ship taking considerable water aboard. On the 21st dissatisfaction among the sailors became evident, but threats of irons soon put an end to it. The equator was crossed January 26, 95 days out and 20 days later she was off the Farallons becalmed. At 7 a. m. February 17 Pilot May took charge and the anchor was soon thereafter dropped, 117 days from New York.

The shipping world rang with praise of Captain Cumming for bringing his ship into port under jury rig, yet looking like a yacht, standing rigging well set up, and everything taut and shipshape. The Board of Marine Underwriters appreciated the performance to the extent of presenting the captain with a purse of \$1000. Repairs made to the ship at San Francisco cost \$18,000.

Record Trip to New York

The Young America sailed from San Francisco April 10, 1869, and made the run to New York in 102 days. The following outward voyage started unfavorably, light and head winds in the North Atlantic delaying her steadily, so that she did not cross the line until October 31, 40 days out from New York. When 54 days out she was only down to latitude 25 south, but thereafter made fine progress. Made the run between the 50's in 7 days and passed Cape Horn 67 days out. Was on the line 27 days later, 94 days out; thereafter had very light and variable winds for 28 days to port. Received pilot at 8 p. m. January 20, 121 days from New York, and entered port the next day, an excellent passage, considering the unfavorable start. Her time from the equator in the Atlantic to the same crossing in the Pacific was but 54 days. Sailed from San Francisco March 15, 1870; crossed the equator 16 days out; passed Cape Horn 42 days out and the equator in the Atlantic on the 64th day. On June 4 at 8 a. m. was within 10 miles of the Sandy Hook light ship, 81 days from San Francisco. A thick fog then set in and no pilot appearing she was forced to haul offshore. The next day received pilot 20 miles east of the light ship, being exactly 82 days from pilot to pilot. Anchored in New York harbor June 6. She was 48 days from equator, Pacific, to a similar crossing in the Atlantic, and 39 days from Cape Horn to Sandy Hook. These runs, as well as the whole passage, are record for a loaded ship over this course, to the present time.

Slow Westward Run

The passage of the Young America from New York to San Francisco in 1870 was 139 days, her second longest over the course. She sailed on August 22 and was 38 days to the line; on October 2, about 5 a. m., she struck a reef off Cape St. Roque.

(To be Continued)

PORTS OF THE PACIFIC

IMPROVEMENTS DEVELOPMENTS ACTIVITIES

THE OAKLAND ESTUARY SUBWAY

By LEWIS B. REYNOLDS

PROBABLY the most forward looking step yet taken toward development of the Oakland Estuary into a leading harbor of the Pacific Coast was made early in January, when final plans for a subway to replace the present Webster street bridge, long a nuisance to land and water traffic alike, were submitted to the Alameda County Board of Supervisors.

By the time this is published it is probable that the plans will not only have been approved, but that bids for construction will have been called for. Tentative estimates place the time necessary for completion at nearly three years from the beginning of work.

To fully appreciate the significance of the subway to the proper development of the Oakland inner harbor it is only necessary to have recourse to the figures for water traffic through the bridge. These show an increase in 1924 of 175 per cent over the figures for 1907, or an increase of approximately 13,800 passages through the draw. The figures for increase in tonnage, while not available, would probably show an even larger percentage of increase.

The figures, in even hundreds, are given below for the water traffic through the Webster street bridge from 1907 to 1924:

1907	7,900
1908	10,500
1909	11,200
1910	10,000
1911	13,100
1912	13,200
1913	14,200
1914	14,300
1915	15,200
1916	19,500
1917	19,900
1918	21,300
1919	18,300
1920	18,900
1921	16,500
1922	17,800
1923	21,400
1924	21,700

Removal of the Webster street bridge will throw the estuary open to uninterrupted use by water craft



Map of portions of Oakland and Alameda, California, showing the location of the proposed subway and of the principal shipyards and terminals affected thereby.

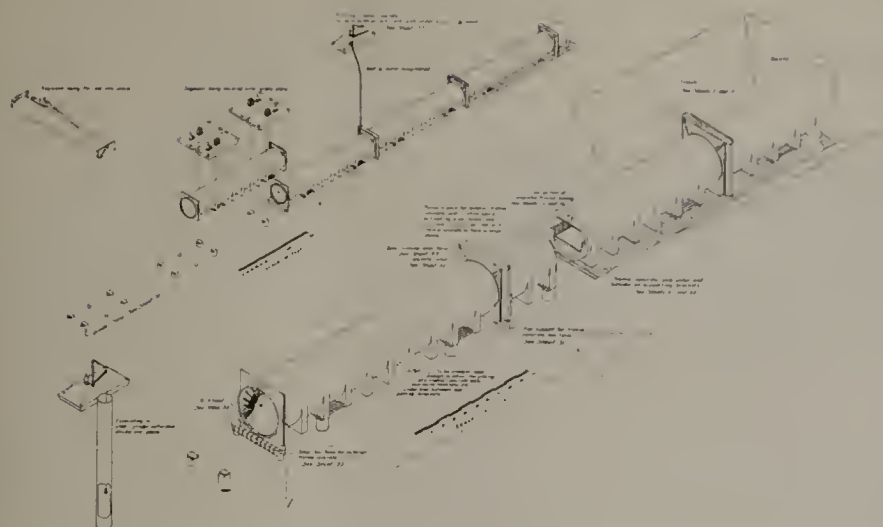
up as far as the Park street bridge, opening six miles of waterfront unhampered by obstructing drawbridges. It will allow access to three more steel shipbuilding and drydocking plants without the necessity of passing through one or more bridges, besides affording the same advantages to a number of smaller yards. The chief yards so affected are the Alameda Works of the Union Plant of the Bethlehem Shipbuilding Corporation, Ltd., the Hanlon Drydock and Shipbuilding Company, and the General Engineering and Drydock Company.

In addition to the drydocking and shipbuilding yards, a large number of lumber mills and freight terminals, both existent and under construction, will be benefited by the substitution of the tube for the bridge. The Encinal Terminals, at present nearing completion on land in Alameda owned by the Alaska Packers' Association, is an example of the type of coastwise and offshore terminal that will undoubtedly

become increasingly numerous along both the Oakland and Alameda sides of the estuary within the next few years.

The approval of the War Department for the subway was based on a minimum depth of 40 feet from mean low water level, but as a matter of fact, the clearance will be somewhat more than that. At all times it will be possible for vessels drawing up to 35 feet of water to negotiate the channel over the tube, and a clear channel with a minimum width of 670 feet between the pier-head lines will be established.

At present water traffic to and from the upper estuary is subject to certain restrictions other than those inherent in the disadvantages of having to pass through a draw. For at certain hours of the day, for half an hour in the morning, and for half an hour in the late afternoon, the traffic of streetcars, vehicles, and pedestrians over the bridge is so heavy that it is kept closed to all ordinary water traffic.



Diagrammatic sketches showing proposed reinforced concrete unit method of construction, placement, and foundation.

In addition to this difficulty, there is, of course, the added danger to navigation which the bridge presents. The recent accident to the High street bridge, further up the estuary, when a steam schooner collided with it, putting the bridge out of commission for over a month and damaging itself, is an illustration of this. For when the tide is running the present fairway of a little more than 150 feet which the open span allows is none too great and cannot begin to compare in safety to the 670 feet which the tube will bring.

By 1928, when it is expected that the subway will have been finished and the present Webster street span

removed to take the place of the old one at Park street, practically two more miles of main channel will have been added to the unimpeded portion of the estuary. It is confidently expected that within a few years after the opening of the tube to traffic a large part of the unoccupied tracts in East Oakland, on Government Island, and on the Alameda side will have been developed and contributing to the growth of the inner harbor. For it is no secret that one of the most compelling reasons for deciding to build a tube, rather than rebuild the bridge, was the development of the port. In the minds of the far-sighted men who were influential in the adoption

of the tube was the idea that in the future San Francisco will become to the bay region what Manhattan Island is to New York, and Oakland and the other cities on the eastern side of the bay will handle more and more of the tonnage each succeeding year. To these men the selection of a tube was simply making in advance a choice to which they would later be forced.

The plans for the subway call for a crossing at Harrison street, one block to the eastward of Webster street and at the site of the old Southern Pacific bridge which was taken out several years ago. The subway will be 3380 feet between the portals, while the estuary section will be 2436 feet. It will be practically level between pierhead lines.

Two methods of construction are open to bidders, one calling for precast, reinforced concrete tube sections, and the other for a steel shell embedded in concrete. In either case a trench will first be excavated, and the tube sections floated into place by tugs, then sunk on the foundations prepared for them. Preliminary and tentative estimates have placed the cost in the neighborhood of \$5,000,000.

George A. Posey, engineer for Alameda County, is chief engineer on the project, while C. W. Holland, W. H. Burr, and Charles Derleth, Jr., are consulting engineers.

HONOLULU MAKING PROGRESS



Masters of merchant vessels that have visited Honolulu in the last half-century and more will recall the old custom house, pictured above. It is soon to disappear, as it and the building adjoining on the left will be razed to make a plaza at the foot of Fort street between Piers 8, 9, and 10, the big trinity now approaching completion. Razing will begin as soon as other quarters can be found for some of the customs force still using the structures, President Coolidge having signed an executive order transferring the property back to the Territory of Hawaii. The custom house is built of hand-hewn coral blocks. A portion was begun in 1860 and completed in 1867.

PANAMA-PACIFIC AT SAN DIEGO



SAN DIEGO FROM THE AIR

Upper view shows the Panama-Pacific liner Manchuria entering San Diego harbor. Center view is an aerial view of the San Diego waterfront showing the Manchuria at the municipal pier. Lower view shows San Diego with the Manchuria approaching from the South. All photos U. S. Navy official, by the Naval Air Station, San Diego.

Steamship Company, freight agents for the International Mercantile Marine on the Pacific Coast.

The addition of the port of San Diego to the schedule of the Pana-

SAN DIEGO, one of the oldest seaports on the Pacific Coast, has recently taken on a new lease of life. A splendid municipal pier project has been partially completed, and arrangements have been made whereby the city becomes a port of call for the westbound steamers of the Panama-Pacific Line. These steamers include the palatial passenger and freight liners Manchuria, Finland, and Kroonland, one of the latter to be superseded by the even more palatial and larger Mongolia.

Passenger booking arrangements will be taken care of by the International Mercantile Marine organization. Bookings for freight are under the supervision of the Pacific



ma-Pacific Line is the result of the growth in commerce of this city and the demand of its citizens for a direct water transportation service with the Atlantic Coast. It will be particularly appreciated by tourists and home seekers who wish to make the trip to Southern California by water, as the Panama-Pacific Line makes particular accommodations for these travelers.

Travelers to the Pacific Coast are particularly fortunate in having San Diego as the first port of call after leaving the Panama Canal, and will find this fair city of sunshine and palms a veritable paradise.

The Panama-Pacific reports that there will be no time lost in its fortnightly service to Los Angeles Harbor and San Francisco and travelers to the two more northern cities will have the additional pleasure of visiting this beautiful city.

AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

AN IMPROVED SPEED REDUCER

ELECTRIC motor drive has now come to be the rule rather than the exception. Individual motor drive eliminates overhead shafting and thereby improves lighting and permits better crane facilities. It also saves floor space and permits of placing machines to suit convenience or efficiency in production, rather than with reference to existing shafting.

Only a few kinds of machinery, however, run at speeds to which electric motors are conformable. A wide range of speeds, varying by small steps, is obtainable with direct current motors, but with alternating current motors only a few fixed speeds are available, and in any case the speeds of commercial motors are generally much higher than those of the driven machinery. Moreover, slow speed motors cost more, occupy more space, and are less efficient than high speed motors. High speed alternating current motors also have better power factor characteristics than do slow speed motors. These considerations have led to the use of a wide variety of speed transmission devices, such as belts and pulleys, chains and sprockets, and toothed gearing, and more recently, various compact forms of gear speed reducers, including spur gears and worm gears. To meet this need with a compact self-contained unit, the De Laval Steam Turbine Company of Trenton, New Jersey, has developed a line of worm gear reductions which are applicable to motors and turbines driving such machinery as rotary kilns and coolers, tumbling barrels, agitators, mixers, dryers, mills, calenders, paper machinery, machine tools, stokers, cooling tables, transfer rolls, door lifts, fans, elevators, and conveyors of all types.

The design of this gearing has been based upon a careful study of the underlying engineering principles, and the gearing is produced



New De Laval speed reducer.

by special equipment. It differs from the ordinary worm gearing in the tooth-shape used, in the materials employed, in the treatment of the materials, and in the manufacturing methods and shop control. The tooth shape is such as to combine a minimum of sliding and a maximum of rolling action between the worm and the gear, and at the same time to realize continuously the greatest area of contact. Undercutting of the teeth is entirely avoided, as the included angle of the tooth is approximately 60 degrees, as compared with about 30 degrees as found in older types of gears. As the pressure line normal to the face of the tooth at the pitch circle falls within the base of the tooth, failure can take place only by crushing, rather than by bending. In ordinary spur gears the projection of this line falls outside the base of the tooth, and such teeth therefore often break off. In the De Laval worm gear three or more teeth are always in contact, giving exceptionally high load capacity for the size and weight, and suiting the gear for heavy duty service.

Owing to the fact that three or more teeth are always in contact, there is a smooth flow of power, re-

sulting not only in absence of vibration and noise, but also improving the quality of the work done by the driven machine and prolonging the life of connected machinery, especially of gearing and bearings. This smooth flow of power also permits of increased production.

The speed reducer is completely enclosed in a casing, which keeps out dust and moisture. The casing is split horizontally in the plane of the center line of the wheel shaft, the lower half is supported by four substantial feet designed to permit air circulation underneath, thus giving additional radiating surface. A large oil reservoir with baffles on the bottom serves to settle out foreign matter from the oil. The wheel shaft is carried on plain bronze bearings, so split as to be easily removable without disturbing the wheel shaft or the couplings. The side thrust of the wheel is carried by a hardened, ground and polished steel plate, which bears against the bronze face of the wheel shaft bearing. The worm may be located either above or below the wheel and is mounted on ball bearings, the one at the rear of the worm being of the double type and designed to carry the combined radial and thrust load, regardless of the direction of rotation of the worm. The inner races are pressed on the shaft and the outer races are clamped both radially and axially, adjusting and locating the worm in the case. The bearing at the forward end of the worm is of the radial type, the inner race of which is pressed on the worm shaft, while the outer race has clearance axially, permitting the bearing to adjust itself to the linear expansion of the shaft. This outer race creeps slowly, distributing the wear over the race way. The bearings are carried in separate housings so that the case itself is not subject to wear. The worm and wheel and the bearings are lubricated by splash system, the oil thrown from the gearing being caught in troughs cast on the casing wall and thereby led to the bearings.

The worm is made from a low

carbon alloy steel forging, carburized and heat treated after the threads are cut, to obtain a hard surface which will resist wear, and a tough, ductile core which will withstand shock. The ends of the worm shaft are drawn to remove brittleness and to insure uniform decrease in hardness from the worm threads to the shaft ends. To secure the utmost precision the worms are finally ground all over, special attention being paid to correcting the distortion caused by the heat treatments, this operation being performed on machines specially developed to maintain a true lead.

The wheels are made from a special composition of phosphor bronze with a low coefficient of friction, great toughness and high tensile

strength. They are chill cast in dry sand moulds to obtain maximum hardness, pouring temperatures being carefully watched by means of electrical pyrometers. For larger sizes the rims only are made of bronze and are shrunk on solid cast iron centers to which they are secured by threaded keys riveted in place. The worm gear teeth are generated by means of hobs fed in axially, tangentially to the gear, this method being used because it gives the greatest possible area of contact and the best tooth shape. To insure a true pitch line the gear wheel is mounted on its own shaft and hobbled on its own bearings, eliminating inaccuracies often found in gears which are pressed on after generation.

De Laval worm reduction gears are made for transmission ratios from approximately 4 to 1 up to 100 to 1 in one step, and for any higher ratio with double reductions. Power is delivered from a worm reduction gear at right angles to the motor shaft, thus keeping the motor out of the way and often permitting of closer arrangement of machinery without sacrifice of aisle space. The wheel shaft may be extended to the right or left in both directions. Frames arranged for vertical shaft drive are also supplied. Flexible couplings of the pin and rubber bushing type are used to connect the worm shaft to the driving machine and the wheel shaft to the driven machine.

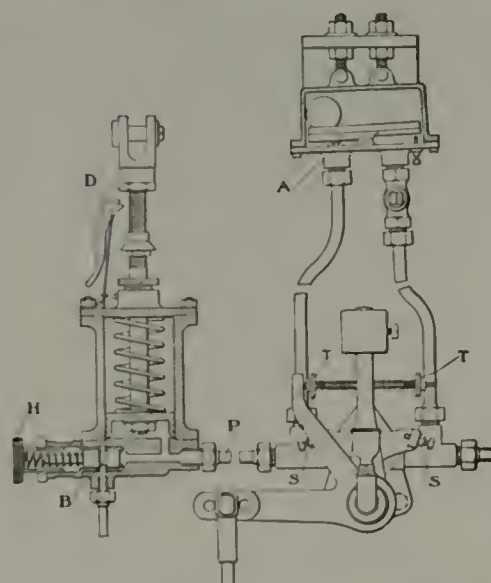
RAMSAY DIESEL GOVERNOR

OVERSPEED and emergency governing of marine oil engines is accomplished by modifying the action of the fuel pump. Owing to the small size of the individual fuel charges which are pumped, light simple mechanisms can be employed and a stoppage of the fuel instantly deprives the engine of the energy supply which is necessary for over-speeding. In the case of a triple expansion steam engine the vacuum as well as the steam present in the intermediate piping and receivers does not come under the control of the throttle, with the result that it cannot be stopped nearly so promptly. Precise regulation can be secured for the diesel engine with considerably greater ease

Among the most interesting of the speed-regulating devices that have recently been perfected for guarding against dangerous speeds at sea is the Ramsay governor.

Since it operates by means of an air relay, it is capable of being adapted to any of the existing means for influencing the discharge of a fuel pump, quite irrespective of the amount of force that may be demanded. A push of 1000 pounds or more is readily obtainable on the spindle of the air cylinder.

Acting on the inertia principle, it is characterized by two distinctive features. First it is capable of delivering two inertia impulses per revolution of the engine, and second it acts in advance to reduce fuel supply before the propeller actually



Air-relay governor. If the oscillating weight hits screws S (either one) air reaches P and raises piston.

gets out of the water and restores the supply before the wheel is again fully immersed. As a consequence of these two features it is better suited to maintain evenness of operation than those devices which are single-acting and which operate only after the effects which they are to correct have become pronounced.

Referring to the line drawing there will be seen an adjustable weight which is oscillated by means of springs and a bell lever drive taken from the fuel pump gear or other part that reciprocates in unison with the engine. If a rise in speed occurs, the swing of the weight becomes sufficient to actuate both of the two tappet screws that limit its travel. Since the screws are attached to a valve, any displacement

of which from the central position causes a flow of air in the tube on which it is located, it is plain that an air pressure impulse will be set up in the tubing at each blow from the weight. Air for this purpose is taken by means of a valve reducing to 25 pounds per square inch from some permanent source of supply such as starting air.

Air pressure is thus communicated to a small cylinder containing a piston attached to the fuel cut-out mechanism on the fuel pump. A small spring loaded pilot valve first allows a fraction of the air impulse to escape to the atmosphere, but in doing so it moves to the left and automatically closes the atmospheric vent. The rest of the air impulse spends itself in moving the piston and thereby interrupting the fuel supply, after which the spring on the pilot valve returns the latter to the vented position and allows the air in the system to escape. Owing to the fact that the small spring is under the control of a hand screw and jam nut, it can be set in such a way as to give the proper travel to the piston.

Should the weight strike a particularly heavy pair of blows, more air is allowed to pass, the piston rises higher and catches under the pawl shown on the outside. This is what would happen if the propeller should come loose or the shaft should break. The complete stoppage of the engine would give warning to the operators and would effectively prevent the machine from "running away." For ordinary racing conditions due to a variation in



Reducing valve furnishes air at low pressure for operating governor relay.

load such as may be caused by a following sea, the double air impulses accompanied in each case by an automatic return of the piston are sufficient to maintain practically normal speed.

The most noteworthy feature, by virtue of which excessive speed fluctuations are prevented even from arising, consists in the anticipating valve shown near the top of the line drawing. When the vessel pitches forward preparatory to thrusting the propeller out of the water, the

ball on the balance-lever valve, which is mounted in a fore-and-aft position and which may be adjusted to any trim of the ship, rolls on one end and admits air to the piston irrespective of the position of the inertia weight. When the ship rights herself before reimmersing her wheel, the ball rolls back and the vent-valve allows the piston to come back and to reestablish the fuel supply even before a serious drop in speed has occurred. Excessive speed fluctuations are thus eliminated and the possibility of making better mileage even in the face of heavy weather is considerably enhanced.

Vessels which have been thus equipped and which have been giving a satisfactory account of themselves are the Scottish Maiden, Scottish Standard, Scottish Minstrel and Scottish Musician, all propelled by Vickers airless injection engines. Two-cycle air-injection engines similarly protected are those of the Scottish Borderer, Silverpine, and Iossifoglu. Because of the double-impulse feature of the Ramsay governor its sensitiveness is sufficient to make it suitable for a good many classes of stationary work.

Chas. Cory & Son, Inc., distribute the Ramsay diesel governor in the United States. This well-known firm



Attachment relay piston to fuel pump cut out gear.

has branch offices with competent engineering organization and complete stock of parts in all principal ports. The San Francisco district is under the efficient management of J. M. Lalor.

THE TRAGEDY OF A BROKEN HAWSER

CAPTAIN TOLSON, commanding the tug J. D. Wood, was towing the four-masted schooner Perry Setzer, laden with lumber, in the vicinity of Diamond Shoals off the North Carolina coast, and was overtaken by the lashing tail of a West Indian hurricane sweeping up the coast. The schooner took in water and became a deadweight on the stern bitts of the tug, threatening to tear the sturdy vessel asunder every time the hawser tautened. By night fall, Friday, November 21, the crew had abandoned the pumps and taken to the rigging, where they lashed themselves fast. Green water sluiced along the deck beneath their feet every time the sluggish schooner thrust its nose into a wave. Only when the vessel rose reluctantly could the men catch sight of the lights of the tug a cable's length ahead. The schooner would charge tardily down the slope of the rollers that passed beneath it, and the hawser would go slack as the tug encountered another wave. Then the schooner would sag back and both vessels would shudder and groan,

while the tightened hawser flung a geyser in the air that was snatched away by the gale. At 5 o'clock Saturday morning there was a report like a gunshot and the schooner suddenly sheered off, rolling drunkenly as the wave caught it fair on the cheek of the blow. The hawser had parted!

This story, dramatically told, is quoted from the newspapers of November 24, as a challenge to marine engineers. The Lidgerwood Manufacturing Company had accepted that challenge many years ago because snapping hawsers were and are all too common.

This company, after experimenting for many years, has developed an automatic tension towing engine, which in fact is a stern reel that gives to light wire hawsers all the elasticity they require to prevent rupture. A striking proof of the efficiency of this apparatus was shown in the towing of the ex-battleship Massachusetts during 1920 by the mine sweeper Vireo (1400

I.H.P.) and the Navy tug Algoma (2000 I.H.P.). The Vireo led with an 1 1/8-inch diameter steel hawser, several hundred feet of which were coiled around the drum of the Lidgerwood automatic tension towing engine. The tow proceeded to Philadelphia to Key West without encountering any severe weather, but on the thirteenth day out encountered a rough sea. The tug Algoma blew out a gasket, shut down her engines, and the Vireo towed both the Massachusetts and the Algoma through rough seas. The sea was heavy enough to throw the tug's propeller out of the water, causing such violent vibrations as to necessitate slowing down to 3-1/3 knots per hour. Frequently 40 feet of hawser were paid out and subsequently automatically recovered. The battleship was brought successfully into the port of Pensacola with a 1 1/8-inch hawser on the automatic tension towing engine, which hawser had been in use for more than two years.

VISIBLE AIR WHISTLE

WITH the coming of the diesel engine the age of steam is slowly passing. This new propelling power aboard the modern vessel has changed many of the ship's auxiliaries. For example, the time honored steam winch has been replaced by the electric winch, and so it is true with other apparatus aboard ship that is now being powered by electricity, small diesels, and compressed air. The only steam left aboard the motorship is from the low pressure donkey boiler used for the purpose of heating in winter.

This change brought about the compressed air whistle, but this apparent advancement brought on a serious objection. The sound emitted from the whistle is very important, but the visibility of the cloud of steam from the old steam



The new Sperry visible air whistle on the stack of the motorship Challenger.

whistle is equally as important, especially in close water operation. This condition has led several motorship operators to install a high pressure steam boiler just for use with the whistle, and while absolutely necessary for safety in navigation, it is exceedingly expensive.

This unsatisfactory predicament led the Sperry Gyroscope Company, Brooklyn, to undertake the development of the visible air whistle which gives off a steam cloud that makes each blast visible to an approaching ship. This whistle is now a reality and has proved successful in continuous operation aboard several motorships.

The whistle is of the diaphragm type and of sufficient intensity to answer all requirements.

The smoke making element is composed of a tank filled with the "smoke liquid," which is emitted through an atomizing nozzle and a smoke pipe of suitable proportions. The air supply for the element is taken either at the whistle proper or at any point between the air whistle and the whistle pull, so that by the opening of the whistle valve it admits air to the nozzle which then takes from the tank a certain amount of smoke liquid, atomizes it and forces the vapor in the smoke emitting pipe, from which it comes out in the form of a white and dense cloud, the volume of which can be regulated by a cock on the side of the smoke pipe. A main valve on the supply line shuts off the smoke emitting element in case it is desired to use the whistle as a fog signal only.

The smoke emitting pipe has also an outlet provided with a valve so as to act as a scavenger and push

the gases to the smoke pipe. The smoke liquid tank is good for several months of average operation, and can be easily replaced with a spare tank.

"APEX" CO. RECORDER

REALIZING that most of the smaller plants and even some of the larger plants consider the prevailing cost of CO₂ recorders too high to warrant investing in them, the Uehling Instrument Company, of Paterson, New Jersey, have just started to introduce an entirely new inexpensive CO₂ recorder known as the "Apex." Inasmuch as the price of the new recorder is less than half that of other CO₂ machines, including the standard Uehling, it is believed that the new instrument will open up an entirely new field among the smaller plants. In fact, it is stated that the anticipated fuel savings will warrant its adoption for boilers of 50 horsepower or over.

The "Apex" CO₂ recorder employs no chemical solutions and there are no moving parts excepting the pen mechanism. The Pyro-Porus filter and the standard Uehling gas dryer and desulphurizer are used, insuring absolute cleanliness of the gas line and interior parts of the instrument. As a result of these features the manufacturer claims that the recorder will operate accurately without any attention or adjustment other than the changing of charts and renewals of dry absorbent, which should not exceed 10 minutes weekly.

This instrument is being exhibited for the first time, in both recording and indicating types, at the Power Show which is being held at the Grand Central Palace in New York during the first week in December.

Electric Equipment for Cranes is Bulletin No. 48732 recently issued by the General Electric Company. This is an attractive 35-page leaflet, well illustrated with photographs, diagrams, tables, and charts. It discusses the subject thoroughly, with particular reference to crane motors and control, brakes, etc. Information is given on operating characteristics, and types of standard motors are listed, together with other valuable data.



Arrangement of the new Sperry visible air whistle.

ELECTRIC DECK MACHINERY

By A. O. LOOMIS, Marine Engineer,
Westinghouse Electric & Manufacturing Co.

WITH the advent of the motorship, the attention of marine engineers was seriously directed to the use of electric drive for engine room auxiliaries and those exposed on deck. Only in comparatively few cases did the builder of the motorship consider the use of a steam plant for the operation of the auxiliaries. Of course, in these few cases he also provided enough steam for heating the vessel, and probably in the last analysis this, together with the lower first cost of the auxiliaries, was the only justification. If there were formerly an element of uncertainty as to the reliability of the electric drive, this does not exist now in the light of the many magazine articles, published reports, testimonials, etc., indicating the successful application of electricity on shipboard.

The matter of economy is of great importance. If we go to the published reports of the chief engineer of the motorship Seekonk, we observe that about one pound of oil, or the equivalent of a little over 3/10 cents (oil at \$1 per barrel) is needed to handle one ton of cargo. Over ten times this amount of oil was required per ton for the handling of cargo by means of steam winches on the Hog Island class of steam vessels.

In order to have full torque at all parts of the stroke, so that full starting effort may be obtained at all times, also in order to make use of the reversing throttle valve for certain kinds of winches, no cut-off of steam in the cylinder is possible. Under these conditions, the little economy which would ordinarily result from the expansion of steam is lost; also as a result of wear in the engine parts, the effect of leakage and reduced efficiency is present to a greater extent, as the equipment gets older. The efficiency of the electric motor is affected but slightly on account of wear.

A still further loss appears in the form of condensation in the long steam pipes and return exhaust lines. In winter, when the machinery is not running, either the lines and cylinders must be carefully drained or a slight amount of steam must be passed through the systems which are exposed to the weather, so that freezing of the equipment may be prevented. Electric cables

do not freeze. Furthermore, the bending, warping or natural movement of the ship's hull has no injurious effect upon the wiring layout; whereas constant inspection and tightening of the joints in the steam lines are necessary to prevent leaks—a constant source of danger and often considerable expense when the leaking of water or steam is in the proximity of the cargo.

Heating, sweating and fermentation may be caused by a small amount of moisture communicated to some articles, of which examples are: rice, sugar, hemp, grain, wool, oakum, tobacco, leather, flax, lime, felt, hay, starch, jute, cotton, chocolate, coffee, coal, cheese, charcoal, ashes, and ginger. Many of the goods mentioned above will be rendered entirely worthless in the presence of moisture. Spontaneous combustion may result in some cases, in others the strength of noxious odors and the activity of vermin may be increased.

Especially when combined with moisture, heat radiated from steam pipes, passing through the cargo spaces, increases bacterial activity, and as a result will damage perishable foodstuffs. Barrel staves may part under high temperature and permit the goods held in casks or barrels to waste by leaking outward, or render the containers weaker, so that eventually partial or complete loss of the contents may be the result.

Ice, tallow and wax are examples of commodities that melt at a comparatively low temperature, not only damaging themselves, but also other cargo with which they come in contact, if the heat becomes excessive. The operations of loading or discharging may even be affected, as when a cargo of asphalt fuses and must be dug out from the place of stowage.

The heat radiated from steam pipes passing through or near living quarters is an objectionable feature, which is entirely eliminated by the transfer of electrical energy over suitable cables.

The reduction of noise and vibration is especially noticeable where the electric gear has replaced the reciprocating steam engine. This fact is especially true in connection with the steering gear and should be of special interest to operators

of combined passenger and cargo vessels. In connection with both steam and electric cargo winches, the port engineer of a large shipping company has remarked that many operators are inclined to believe that the electric winches are slower than those driven by steam. However, our daily records show that we move cargo as rapidly with the one as with the other. The reason for this general belief may also be the fact that electric winches are not noisy, and therefore one is inclined to believe that they are loafing on the job. This is not true. The motorship Challenger broke the daily loading record at Philadelphia even though the stevedores were unfamiliar with the operation of electric winches.

The location of cargo winches should be such that the drift between the leader block at the heel of the boom and the drum of the winch is sufficient to insure even winding. In addition to this fact, the steam winch must usually be placed near the hatch opening so that the operator, who should be able to look down the hatch, can operate the throttle at all times conveniently. This last requirement is not imposed on the electric winch for which the controller is separately mounted, and can be conveniently located very near the hatch coaming, if desired. The electrical industry can go even further than this, and supply portable master controllers for deck service.

Going forward of the winches on shipboard, we come to a piece of machinery—the windlass—which is exposed to a great amount of spray from the bow waves. In cold weather the windlass is likely to be coated with considerable ice. If electrically driven on the exposed deck, the motor also has its white covering. However, since there are no reciprocating parts to become jammed with the ice, it is perfectly possible for the electrician to turn on the current, start the motor, and break up any fouling of the rotating equipment. With a steam windlass under similar conditions, the use of an ax is usually required to free the reciprocating parts. Also the steam cylinders may be cracked, or, if they are not, condensation in the pipes and cylinders will be excessive. Unlike the electric motor, the engine

will be unable to give maximum effort when it is urgently needed.

An advantage of considerable importance in favor of the electric auxiliaries on shipboard becomes apparent in certain instances where the shore power is of the same character as that on the vessel in question. In this case, shore cables can be connected to the ship's switchboard, and the shore power supplied throughout the vessel instead of that from the regular ship's sets.

The advantage to be gained by this substitution of shore power is obviously greater where the steam

driven sets, together with the boiler equipment, can be taken out of service, than it would be if the diesel sets on board are to be shut down.

Privately owned lines having regular ports of call can provide shore power connections for serving the electrically equipped vessels.

We have already discussed in connection with electrically driven auxiliaries, the possibility of readily connecting in the electric circuit, indicating or recording meters by means of which the power requirements can be definitely determined. Electric meters can be much more

conveniently installed than those which record the flow of steam.

As regards space, weight and first cost of the deck equipment, the steam auxiliaries usually possess the advantage over the electric. However, since the operating expenses make up the major part of the total cost of the machinery, the entire picture is not presented with the idea of the first cost. The slight additional space and weight consideration is, we believe, offset by the higher economies and greater conveniences obtained with the electric drive.

ELECTRIC ELEVATOR STACKING TRUCTOR

AN electric elevator tractor for transporting and stacking bulky cylindrical and rectangular loads has just been developed by The Elwell-Parker Electric Company of Cleveland.

The tractor handles rolls of fabric, carpet, linoleum, rubber stock, steel, newsprint, and barrels, bales, boxes, textile beams, etc. Its method of handling is very ingenious, automatically picking up its load in any position and stacking either vertical or horizontal, as desired. The elevator can raise the lower end of the load 6 feet. Thus, material 6 feet high can be stacked, end on end, to 12 foot heights with practically no additional attention. This method saves much valuable storage space, eliminates the double handling by the cumbersome block and tackle method, results in the conservation of time and labor, and avoids the usual hazards attendant on hand handling.

The unit consists of an elevator tractor with a revolving apron or cradle for securing the load at the end of the platform, the cradle being built to suit. The load is raised or lowered by operating the elevating platform while the cradle is revolved to any position from the horizontal to the vertical by means of the additional hoisting unit.

The two hoisting units for operating the elevator and revolving the cradle are standardized with interchangeable parts. All power for the equipment is supplied from one central storage battery carried in the battery compartment, with individual controllers for the lifting, revolving, and driving mechanism.

Two dual compensating wheels are used at end nearest load, affording wider tread, improved stability, longer life to tire, and the employment of larger bearings than in any other type of somewhat similar equipment. The standard Elwell-Parker safety

devices are installed along with some additional ones covering the new operation, as, with the slacking of the elevating cable while lowering load due to striking an obstruction, elevating motor instantly stops. One man operates the equipment and has clear vision of the forward part of the unit at all times.

NEW ELECTRODE HOLDER

A NEW type of welding electrode holder marketed by the General Electric Company allows welding operators to make a quick change from burnt stub to new electrode. The operator needs only to strike the stub end of the old electrode, causing it to drop out, when the new wire can be inserted instantly without unnecessary effort.

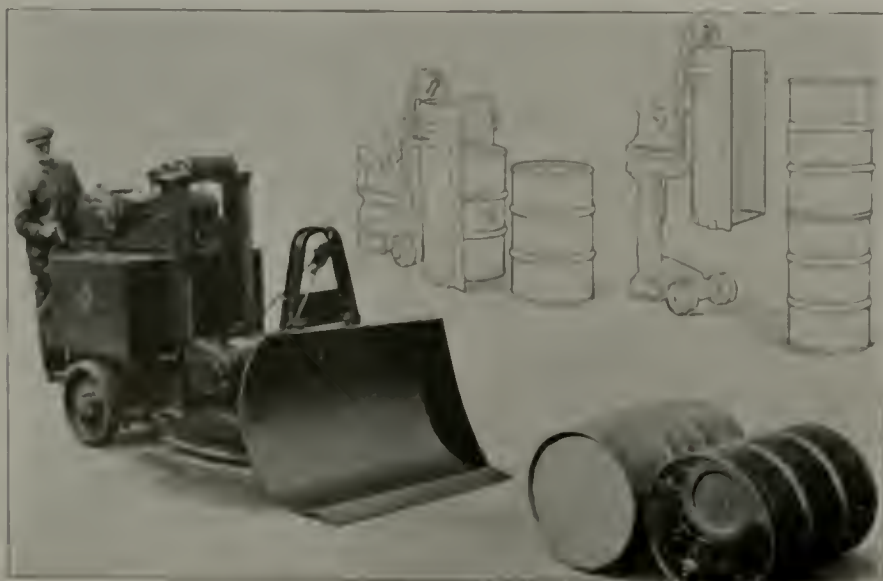
The new holder consists of a punched fiber tube with a tinned brass plug inserted in the end. A steel spring rod holds the electrode in place against one of a number of different sized notches provided for the purpose. The welding cable running to the source of power is soldered to the other end of the holder by removing the fiber tube and fiber guard, accomplished by loosening a single screw.

The construction of this holder is such that the contact of the electrode is not weakened by heat, since it does not depend upon any heat-affected spring.

The Columbian Calendar for 1925.

This calendar, as per the usual Columbian custom, features a fine square-rigged ship of the clipper design, from the original painting by Charles R. Patterson, one of the foremost marine painters of the present day.

The calendar measures 16½ inches wide by 33 inches long and has a large date pad.



The Elwell-Parker elevator stacking electric tractor.

THE SAL-SPEEDOMETER

FOR some years many European vessels and not a few American ships have been equipped with the Sal-Log, a Swedish device for registering the speed of traverse and the distance traveled. This apparatus has been described in former issues of Pacific Marine Review, but for the convenience of our readers we illustrate and briefly describe the operating principle.

Two pipes terminating in open-

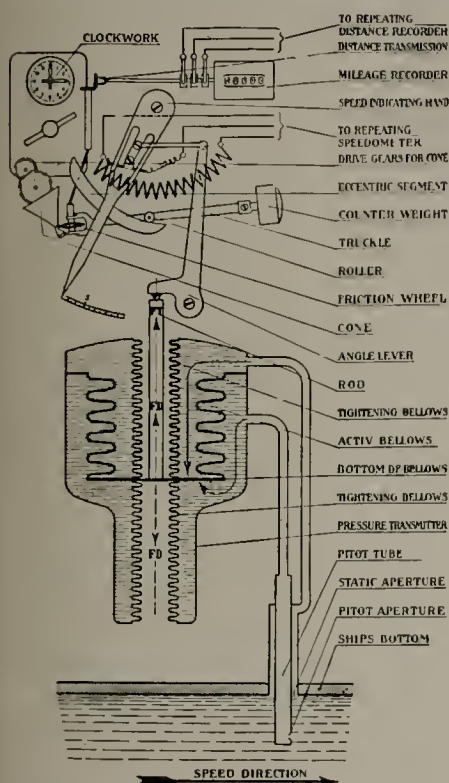


Diagram showing the principle upon which the Sal-Log works.

ings on the ship's bottom are connected to two chambers separated by a diaphragm. The opening of one pipe is further terminated by a Pitot tube projecting about 4 inches outside ship's bottom. With the ship stationary and the two pipes with their respective chambers entirely filled with water, it is evident that the pressure on the water columns will in each case be that due to draft and will balance the diaphragm in the zero speed position. Any movement forward will increase the pressure in the Pitot tube by an amount directly proportioned to the speed of the movement. Hence the displacement of the diaphragm will be proportional to the speed of the boat. A simple rod and lever mechanism transmits the displacement of the diaphragm to a pointer, which indicates on a curved scale the speed in knots per hour. The movement of this pointer carries a curved segment on which a pivoted truckle rests with a rolling bearing. The free end of this truckle carries a friction wheel actuated by a cone. This cone is driven by clockwork with its speed so adjusted that for any position of the speed pointer the friction wheel will be so located on the cone surface as to register through suitable counter gearing the exact distance traveled.

This Sal-Log mechanism has maintained records of accuracy with less than 1 per cent error over long distances.

Realizing the need of a simpler, less expensive, but accurate speed

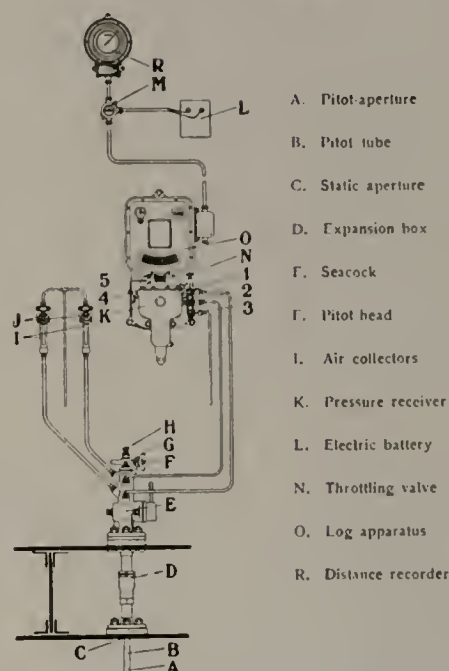


Diagram showing the Sal-Log connections.

recorder for small craft, the manufacturers of the Sal-Log have now developed the Sal-Speedometer, in which the same principle is used, but which acts simply as a speedometer. With this instrument installed on a motorboat or yacht, it is easy to read directly the exact speed at any given moment, which is always a satisfaction to the owner who takes pride in the performance of his boat.

The Sal-Log and the Sal-Speedometer are distributed in the United States by the Molecule Engineering Company of New York.

A NEW APPLICATION OF FLAXSEED POULTICE

THE Filtrator is an apparatus which prevents the formation of scale in steam boilers. It consists of an outer cast iron cylinder and an inner perforated cylinder containing ordinary flaxseed. Live steam from the boiler is piped directly into the Filtrator, permeates the flaxseed, extracts from it a mucilage, and condenses, producing the Filtrator emulsion.

The pressure inside the Filtrator is at all times equal to the working pressure on the boiler, and the production of the Filtrator emulsion is therefore quiet and constant. The emulsion descends by gravity, drop by drop, into the boiler. In the boiler the Filtrator emulsion mixes

with the circulating water so that every part of the water in the boiler contains emulsion and assures equal efficiency of action on all surfaces of boiler sheets and tubes. This condition continues as long as the Filtrator is in operation.

It is well known that the cause of formation of scale in steam boilers consists mainly in the precipitation of different solid matters insoluble in water when heated to the temperatures characteristic to each of these matters, or the scale results from the chemical reactions that take place in the water. When these matters are precipitated they adhere to the surface of the boiler and form scale.

When the Filtrator emulsion is introduced into the boiler constantly and in sufficient quantity it coats with a thin film each particle of any hard matter suspended in the water and prevents it from adhering to the surface of the boiler. These coated particles gradually settle and are ejected from the boiler in the regular blowdowns. Its action in the boiler is purely mechanical as the emulsion is chemically neutral. This property makes the Filtrator emulsion absolutely harmless to the metal of the boiler and its fittings, and, acting mechanically, it will treat any kind of water. It prevents the formation of scale where very hard water or sea water is

used. The Filtrator regulates the quantity of emulsion required to absorb the hardness of any given water.

The Filtrator emulsion coats the entire inner surface of the boiler with a protective film and in addition to coating scale particles it also absorbs acids contained in the water thereby preventing pitting and corrosion. The Filtrator emulsion absorbs any lubrication oil that gets into the boiler and prevents its harmful effects. Another feature of the Filtrator emulsion is that it enters the cracks always existing on the surface of old scale and pen-

etrates between the scale and the boiler metal, gradually loosening the scale which is then thrown off by the circulating water.

The Filtrator process leaves the husk of the seed intact and no oil is extracted from the flaxseed. The perforated container with the exhausted flaxseed is removed at regular intervals and is replaced by the spare container with a new charge.

The port superintendent of an Atlantic Coast transportation company with installations on four steamers writes: "They have absolutely prevented the formation of any new

scale and have removed a large quantity of the old scale from tubes, tube sheets, and furnaces. The chief engineers report to me that there is no priming and that the piston rods look clean and bright as never before. No pitting and corrosion has been observed.

"Taking into consideration that all four steamships have reported the same good results, there is no doubt left in my mind as to the efficiency of Filtrators."

The cost of installation of the Filtrator is quickly repaid by the savings effected, and the cost of upkeep is trifling as the raw flaxseed can be bought at a very low price.

TRADE LITERATURE

Electricity vs. Muscle. In almost every walk in life new methods are in use, the man who used to saw by hand now switches on the juice. Such is the caption and rhyme introduction to an attractive folder published by Michel Electric Hand Saw Company of Chicago and describing their Skilsaw, a neatly designed electric hand sawing device.

This portable tool consists of an 8-inch circular saw driven through specially designed worm gearing by an universal type motor controlled by a trigger switch. The saw is covered by a guard and equipped with a guide and follower which are adjustable for depth of cut up to 2½ inches. It will handle 2-inch hardwood cuts very nicely, and can be used for grooving. Equipped with special cutters it will satisfactorily cut various materials and has been in service on wood, wall board, plaster board, plymetl, fibre, linoleum, hard rubber, insulated cables, brass, light gauge metals, transite, and many other special compounds. In ship repairing, boat building, and on docks there are many marine uses where this tool would "cut cutting costs."

Gould's Centrifugal Sump Pump. Fig. 3029. An attractive pamphlet describing the latest child of the Gould Pump family. This is a self-contained electric motor driven centrifugal pump set mounted with a float switch on a circular plate designed to fit the bell end of a common 18-inch sewer tile. Once installed in a cellar or pipe tunnel, its operation is automatic.

The shipping weight is 210 pounds, and the outfit can be furnished with either an alternating or

a direct current motor, and will pump 20 gallons per minute to a head of 20 feet. This unit may be used as a transfer pump for automatic transfer of liquids from one tank to another; as drainage pump for automatic draining of elevator pits, vats, tanks, or bilges; as a boiler feed pump for lower pressure boilers.

Correct Protection Against Fire. a 24-page booklet, just issued by Foamite-Childs fire protection engineers, is a popular treatise on fire protection for all sorts of risks, written in non-technical terms so that the suitability of any type of fire extinguisher for any particular risk may be determined by the layman.

The "A," "B," and "C" classifications of fires made by underwriters' laboratories are defined and the proper safeguards for each class of fire are charted. This chart is a novel feature of the Foamite-Childs booklet. It presents a clear, concise picture of the merits and deficiencies of each type of extinguisher for every kind of fire risk, listing the chemicals employed, the nature of the extinguishing agent, the extinguishing effect, and the nature of the risk or risks for which each type of extinguisher is approved by underwriters' laboratories.

This booklet is attractively printed in colors, and is being distributed gratis. A copy may be had by writing to Foamite-Childs Corporation, Utica, New York.

The Monitor Controller Company, Baltimore, Maryland, has issued Bul-

letin No. 67 describing the Monitor Edgewound Resistor.

This new electrical resistor is intended for use with motor starters and speed controllers and is also well adapted to all classes of service requiring an electrical resistor for relatively heavy currents. It is moisture-proof, acid-resisting, unbreakable, and requires less space than the common cast-iron grid resistor.

The Botfield Refractories Company, Philadelphia, has just issued a very useful pocket-size booklet of interest to all users of fire brick.

It contains a number of helpful fire-brick construction suggestions, including the proper method of laying fire brick for thin but firm joints; how to coat furnace walls and other fire brick construction to protect the brick and prolong its life; the method of filling up holes and depressions with an inexpensive patching mixture, saving many dollars of new construction costs; and how to lay up single ring arches, in which any one ring or part of a fire brick can be replaced without removing other rings.

The Arc Welding and Cutting Manual recently issued by the General Electric Company is a 127-page volume, bound in cloth. This has been given the designation Y-2007 and was issued "to acquaint the uninformed in a general way with some of the applications of arc welding, and to provide a simple and logical method by which one may acquire a certain familiarity with the manipulation of the electric welding arc and its characteristics."

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

SOMETHING in the way of a liberty has been taken with the sacred River Plate Clause, and in conservative England, of all countries. It has been thought from time immemorial that dreadful consequences would attend upon any trifling with this underwriting bulwark, which originally grew out of the large number of fires occurring in the sheds and warehouses at River Plate ports but, apparently, nothing sensational has to date happened to the men who had the hardihood to lay violent hands upon the clause. In a word, the Institute of London Underwriters has issued an altered River Plate clause. They have inserted the words "of fire", and this apparently slight change makes the application of the coverage something quite different from what it was. Now the clause reads as follows:

"The risk of fire under this policy shall cease upon the arrival at any shed (transfer or otherwise), store, custom house, or warehouse, or upon the expiry of ten days subsequent to landing, whichever may first occur."

This change is going to make a substantial difference in practice. It means that underwriters are making the assured a real concession in the extension of the hazards of theft, pilferage and other perils usually covered by insurance, for a longer period than that stated in the River Plate clause of yesterday. But it is to be remembered that, although an additional premium is offered, it is expressly agreed that the risk of fire will in no case be held covered under the marine policy for a longer period than that provided by the clause. Experience alone will tell whether the concessions have been wisely made or no.

Evidently, the British underwriters were not unmindful of the possible increase in the theft and pilferage coverage as a practical work-

ing-out of the new agreement, for, in amending the clause, the Institute has recommended that if such risks are to be insured under it to the consignee's warehouse the new clause should be extended by the words:

"But all other risks insured under the policy are covered until the goods are safely delivered in the consignee's or other warehouse at the destination named in the policy, or until the expiry of fifteen days from midnight of the day on which the discharge of the goods hereby insured from the overseas vessel, whichever may first occur.

"When the destination to which the goods are insured is without the limits of the port of discharge of the overseas vessel the risks covered by this policy continue until the goods are safely deposited in the consignee's or other warehouse at the destination named in the policy or until the expiry of thirty days from midnight of the day on which the discharge of the goods hereby insured from the overseas vessel is completed, whichever may first occur."

A number of critics have concluded that one reason for confining the River Plate clause to the risk of fire is that by including other risks in the ten days limit the assured are not so well off as they are with the warehouse-to-warehouse clause, of which the above is the concluding portion of the Institute form. When the ordinary warehouse-to-warehouse clause is given in place of the ten-day clause the underwriters are extending their liability for such risks as theft and pilferage for at least five days, and, in some instances, for twenty.

Says one writer on a British exchange: "Theft was, and still is, one of the worst shore risks in the Plate trade, and the ten-days clause did much to keep down claims, not only by limiting the period of cover,

but also by making the assured take precautions against theft. Whether the extended cover now obtainable will result in an increase of theft claims remains to be seen, but, if it has that effect, it will be too late to take any practical steps to remedy the defect, and it would be difficult still further to amend the clause to make it apply to the risk of theft so soon after having given way to so considerable extent."

Exchange Rate in Adjustments

There has been a growing feeling among marine underwriters for several years that the method used in dealing with matters of exchange in general average adjustments tends to favor shipowners to the disadvantage of cargo interests. This culminated, last spring, in the appointment by the Board of Underwriters of New York of a special committee to consider the whole subject and to make recommendations. Last month this committee issued its report, with the result of a vast deal of criticism being leveled at it by brokers and shipowners.

As adjustments are now drawn, the shipowners generally suffer no loss by the fluctuation in exchange, whereas cargo interests frequently find themselves in a position of having to accept allowances in general average in depreciated currencies or to stand heavy losses on general average disbursements which may have been made in currencies which have lost much of their original value.

The conclusion of the board's committee is that the flag of a vessel alone should not alter the amount payable under a general average adjustment, and that the sole test should be what is properly claimable in the currency of the destination of the vessel and at the time the venture is completed. They are also of opinion that adjustments should be made up in currency of the port of destination, but that

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where this is not done by special agreement, then all allowances, contributory values and deposits should be immediately converted into the currency in which the adjustment is to be stated, which results in all concerned being placed on an equal basis.

The Board of Underwriters of New York, as a whole, and its directors as well, have approved the committee's report, but as a number of adjusters have disagreed with the conclusions of the committee the underwriters are endeavoring to devise ways and means with the hope of effecting a meeting of minds on the several points at issue.

Voluntary Stranding

An opportunity for comparison of the actual working of Rule V of the York-Antwerp Rules, 1890, with the 1924 revised version of this rule has been afforded by the settlement of the voluntary stranding case of the Rama, which went on a rock of the Chatham Islands last November, when her master sent her there in order to avoid her sinking.

Applicable to such a case, Rule V, York-Antwerp Rules, 1890, reads as follows:

"When a ship is intentionally run on shore, and the circumstances are such that if that course were not adopted she would inevitably sink or drive on shore or on rocks, no loss or damage caused to the ship, cargo and freight, or any of them by such intentional running ashore shall be made good by general average."

The version of Rule V, York-Antwerp Rules, 1924, runs thus:

"When a ship is intentionally run on shore, and the circumstances are such that if that course were not adopted she would inevitably drive on shore or on rocks, no loss or damage caused to the ship, cargo and freight or any of them by such intentional running ashore shall be made good as general average."

Critics are pointing out that here is a conflict with the principle on which the whole question of general average is based. There is an old, established reason behind the rule, and older than the rule itself, as witness the rule of practice of the Association of Average Adjusters, dated 1876, which says that "the custom of Lloyd's excludes from general average all damage to ship or cargo resulting from voluntary stranding." This rule does not necessarily exclude such damage as is done by beaching or scuttling a burning vessel in order to extinguish fire; which only makes the old rule the more anomalous. It is important to note that the rule applies only to damage received as a result of the voluntary stranding, and does not affect the damage caused by whatsoever casualty placed the vessel in danger of foundering. Applying the facts known in the case of the Rama, the damage caused by the original striking on the rocks would be particular average, and only such damage as was done by voluntarily beaching the vessel would be made good in general average.

New York Hook Damage

There is a campaign under way at New York designed to investigate the causes for so many serious damages from bale hook injuries to merchandise at that port and to arrive at a method for reducing these depredations upon goods. A joint committee is being formed to combat this evil practice, and the Board of Underwriters of New York has signified its willingness to make a party to the crusade by the appointment of John F. Purcell, of Platt, Fuller & Co., as its representative on the committee. It is the desire of importers of hides and skins, steamship owners, longshoremen and others, to see this form of destruction abated and, if possible, eliminated altogether, and in this movement the underwriters, who are im-

mediately interested, are taking their proper part. The prime mover in the crusade is John R. Arnold, executive secretary of the National Association of Importers of Hides and Skins, Inc., of 41 Park Row, New York.

Hague Rules Before Congress

Marine underwriters are much interested in the progress of the omnibus merchant marine bill recently introduced in Congress by Representative Edmonds of Pennsylvania, because among its features is the proposed Hague Rules relating to the carriage of goods by sea. The bill is very comprehensive and includes the creation of a new controlling agency in the Department of Commerce for the handling of National shipping affairs, in charge of an under secretary for merchant marine. To this would be transferred the administration of the Bureau of Navigation, Coast and Geodetic Survey, Bureau of Lighthouses and Bureau of Fisheries—departments which are at present scattered through various departments and buildings but which are allied in interest and should be housed and controlled as a unit. Pilferage also comes into consideration by the bill, as also the establishment of loadlines for certain American vessels, agreements between carriers effecting water transportation, rate questions, etc. Of especial importance is a feature that would clothe the President with authority to retaliate where foreign nations discriminate against American ships. From all indications, however, there is little likelihood of the enactment of much shipping legislation at this session of Congress.

Changes in Syndicate Membership

The North British "fleet" has withdrawn from the American Marine Insurance Syndicates. This group consists of the North British & Mercantile, the Mercantile of America, the Commonwealth of New

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York, and the Pennsylvania Fire. It was a member of Syndicate "C", which embraces admitted foreign companies and domestic companies under foreign control. As far as can be learned there was no dissatisfaction with the Syndicates or their working, the retirement resulting from purely personal reasons on the part of the management of the North British companies.

The percentage hitherto taken by the North British fleet will be absorbed by an increased participation by the Thames & Mersey, the Yangtze, and the American & Foreign.

Will the Syndicates Write Lake Hulls?

Serious consideration is being given by the American Marine Insurance Syndicates to the question of engaging in the writing of lake hulls, a field it has never entered. At a meeting of the Board of Managers on November 20 this matter came up and was referred to a special committee for a report on December 18. The committee duly reported, but what the nature of its findings was cannot be learned, nor has final action been taken upon the report by the Syndicates managers. If we were to hazard a guess, it would be in the affirmative; and this would be based upon the diminished volume of business written in 1924 due to so much American hull business passing to London by the cut-rate route—a path the Syndicates have wisely declined to walk in. Their good judgment in letting business go rather than to write it at a certain loss has been abundantly justified in the swollen batch of claims that has passed overseas during the last year or two.

Rotor Ship Risks

In a quiet way there has been considerable speculation in the New York market as to the new and multitudinous problems likely to present themselves in event of the success of the extraordinary invention

of Anton Flettner, of Germany, who is claiming great things for his tower rotor ship. Clearly, there will have to be much practical demonstration of the effectiveness of this strange craft before underwriters will want to risk writing such a class. And yet it is well within the possibilities that the rotor ship will do what is claimed for it; at least, to a large extent. The inventor says that his system will save 80 per cent of the usual cost of operation of freight and passenger ships. Such a possibility, backed up by what his experimental Buckau, of 650 tons, has actually accomplished, cannot be otherwise than extremely attractive to shipowners and shippers. Underwriters are interested in discovering what additional and sufficient power of propulsion his craft possesses. They admit, however, that rotorship success would mean a corresponding reduction in freight and passenger rates, which, in turn, means increased traffic and an augmenting of marine insurance values.

New Joint Hull Agreement

Determination to get together in the writing of hulls continues to prevail in the London market, and an initial, though not particularly important, step has been taken in the arrangement of a new hull agreement by the Joint Hull Committee of the Institute of London Underwriters, which limits itself to terms and conditions only. This leaves wide open the door to questionable practices in the matter of rates and values. In the new agreement insistence is made that the Institute clauses be used unaltered for the insurance of liners and tramps, whatever their flag may be, unless it has been customary in the past to grant the owners special clauses, or, in the case of foreign vessels, when the insurance is on recognized national conditions. In the case of new insurances the agreement provides for unaltered Institute clauses of their own, or when

the insurance is on recognized national conditions. The agreement is really an extension of one made some time ago, by which it was stipulated that in no case would 4/4th Running Down Clauses be granted except in the case of liners, or special service vessels, where it had been customary in the past to grant full indemnity against collision liability.

News in Eastern Offices

Universal sadness was created among marine underwriters of the New York market during the closing days of 1924 by the unusual number of deaths of persons in or allied with the business. One of the most unfortunate was that of John Ferguson, marine manager of the American Foreign Insurance Association, who recently completed a 'round-the-world trip in the interests of his organization. About the middle of December he contracted influenza, which developed into typhoid pneumonia, and on the 28th of that month he succumbed to this dread combination. He was in his forty-seventh year, and had been prominent in the business in England and here for a quarter of a century. He left a widow, a son and a daughter.

Charles P. Dorff, of the loss department of Francis C. Carr & Co., Inc., died of typhoid pneumonia on New Year's day. He was thirty-seven years of age, and left a widow and daughter. Mr. Dorff had held responsible positions in the New York marine adjusting field for a number of years, having been with the Northern Underwriting Agency, and with Frank B. Hall & Co., prior to joining the Carr offices last April.

Mrs. Percy Chubb, wife of the president of the Federal Insurance Company and a member of Chubb & Son, died at Assuan, Egypt, on December 26. The internment was abroad.

Mrs. William R. Coe, wife of the chairman of the board of Johnson

& Higgins, died of pneumonia December 28. She was a daughter of the late H. H. Rogers of the Standard Oil Company.

W. A. Cale, formerly of the Northern Underwriting Agency, joined the staff of the F. H. Cauty office on January 1 as an assistant adjuster of claims.

Ernest A. Dollman, formerly of the New York office of Mather & Co., has been admitted to partnership in Walstrum, Gordon & Forman of 70 Maiden Lane.

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Freights and Charters

January 19, 1925.

SINCE our last report dated December 17, trans-Pacific lumber rates to Australia and Japan have steadily increased and there is still a scarcity of tonnage for Feb.-Mar. Japanese owners are holding for \$16 for Australia, and cables report \$12 can be obtained for Feb.-Mar. tonnage to Japan, although the exporters here advise that lumber cannot be sold at these figures.

The following fixtures have been reported for lumber to Australia: Norwegian stmr. Rigi, lumber and general merchandise, \$50,000 lump sum, General Steamship Co.; Norwegian m.s. Borgaa, terms private, prompt loading by J. J. Moore & Co.

Fixtures for lumber to the Orient are as follows: Japanese stmr. Yoneyama Maru, \$10, Jan. loading, Pacific Export Lumber Co.; Japanese stmr. Johgu Maru, \$10.50, Feb. loading by Nakata Co.; Japanese stmr. Hakutatsu Maru, terms private, Jan. loading by Douglas Fir Exploitation and Export Co.; Japanese stmr. Ginyo Maru, \$12.50, Feb.-Mar. loading, charterers not mentioned; Japanese m. s. Fukko Maru, \$10, Feb. loading, Canadian Co.; Japanese stmr. Ginryo Maru, \$11.50, Feb.-Mar., National Commercial Corp.

Swedish m. s. Innaren is reported fixed from North Pacific to South Africa, lumber, terms private, Mar.-Apr. loading, J. J. Moore & Co.

British stmr. Torhamvan is reported fixed with lumber from British Columbia to Cuba, \$13.50, option North of Hatteras, \$14, Jan. loading, South Alberta Lumber Co., and the following steamers are reported fixed for lumber to the Atlantic seaboard: American stmr. El Abeto, \$14, Jan.-Feb., H. R. MacMillan Export Co.; American stmr. El Cedro, same; American stmr. Severance, Feb. loading, terms private, A. C. Dutton Lumber Co.; British stmr. Margaret Coughlan, \$14.50, late Mar. loading, charterers not mentioned; American stmr. Juvigny, \$14, South Alberta Lumber Co.

British stmr. Margaret Coughlan is reported fixed for general cargo from the United Kingdom and/or

Continent to Pacific Coast ports, 18/-. Meyer, Wilson & Co.

The following steamers are reported as having been taken on time charter: Japanese stmr. Koshin Maru, one round trip, delivery Japan, redelivery Japan, 73c per d. w. t. per month, W. L. Comyn & Co.; British stmr. Elmworth, one trip, delivery North Pacific, redelivery Australia, 7/3, Jan.-Feb. loading, Balfour, Guthrie & Co.; Italian stmr. Livenza, lumber, delivery North Pacific, redelivery Australia, 5/9, J. J. Moore & Co.; Japanese stmr. Kurohime Maru, Feb. loading, C. K. West & Co.; Japanese stmr. Shaka Maru, one trip, delivery Japan, redelivery Orient, via North Pacific and Australia, 63c per d. w. t. per month, Jan.-Feb., American Trading Co.; British stmr. Strathfillan, delivery Hull, redelivery Alexandria via North Pacific, 4/3, Jan., H. R. MacMillan Export Co.; British stmr. City of Victoria, one round trip, delivery Humboldt Bay, redelivery Pacific Coast via Australia, \$9000 net monthly.

The following sales have been reported: American schr. Wm. H. Smith, from Burns, Philp & Co. to Union Fish Co.; German stmr. Helwig Vinnen, Robert Dollar Co. to Captain Barney Johnson of Seattle; American stmr. Newport, Pacific Mail Steamship Co. to John W. Chapman; American schr. Eric, Burns, Philp & Co. to J. E. Shields, Seattle; American stmr. Point Arena, Silver Mill & Lumber Co. to Hart-Wood Lumber Co.; American stmr. Depere, U. S. Shipping Board to Porto Rico-American Line; American stmr. Jephtha, same; American bktn. Lahaina (to be dismantled), Hind, Rolph & Co. to Hans C. Moustad; American schr. Sophie Christenson, Henry G. Seaborn to MacMillan Bros., Aberdeen; American tug Moositanka, delivery San Pedro, \$46,000, U. S. Shipping Board to Matson Navigation Co.; American stmr. M. J. Scanlon, U. S. Shipping Board to Hammond Lumber Co.; concrete tanker San Pasqual, \$16,000, Emergency Fleet Corp. to Old Time Molasses Company of Havana.

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SHIPBUILDING AND

SHIP REPAIRING

San Francisco Bay Ferries

ON this page is shown a photograph of the new San Francisco Bay ferryboat New Orleans, recently put into service by the Southern Pacific Company on its San Francisco-Richmond route. The ferryboat is equipped for automobile and passenger service.

This ferryboat and two others, the El Paso and the Klamath, were recently completed by the Union Plant of the Bethlehem Shipbuilding Corporation, San Francisco.

The New Orleans, like her sister ships, is 234 feet over-all, 36 feet beam, and 13 feet 6 inches loaded draft. She is propelled by triple

expansion, vertical type, steam engines working on solid cast iron propellers of 10 feet diameter and 14 feet 9 inches pitch. Steam is supplied by 3 E. F. C. standard type water-tube boilers. Electricity for lighting purposes is supplied by two Westinghouse 17½ kilowatt generators, driven by Sturtevant 7 by 6 inch vertical engines. Two Warren vertical feed water pumps are installed, as well as Warren air pump, fresh water, fire, and bilge pumps.

All three vessels proved satisfactory on their trials and inaugurated the San Francisco-Richmond service on January 15.



Naval Appropriation Bill

President Coolidge has instructed the Budget Bureau to investigate and report to him what immediate appropriations are necessary to start the work of modernization and increase of the navy to the extent authorized by the bill passed by Congress the middle of December. Part of the construction will be begun at once with funds already available, but the major portion of the program is dependent upon appropriation to be made by Congress.

The modernization and increases authorized by the bill signed by the President on December 18 comprise:

1. Alterations on the battleships New York, Texas, Florida, Utah, Arkansas, and Wyoming, including installation of oil burning equipment and protection against submarine attack and installation of anti-

aircraft armament, and new fire control systems on the New York and Texas, total cost not to exceed \$18,360,000.

2. Construction, beginning July 1, 1927, of eight scout cruisers to cost not more than \$11,100,000 each and six river gun boats to cost not more than \$700,000 each.

The Navy Yards on the Pacific Coast hope to obtain the construction of some of the scout cruisers and river gun boats, as well as the conversion jobs.

CONVERSION JOB

The tanker Brilliant, formerly the steam-driven tanker Anahuac, belonging to the Atlantic Refining Company's fleet, has been converted to oil engine-electric drive at the Harlan Plant of the Bethlehem Ship-

building Corporation. Two 225-horsepower Ingersoll-Rand direct-injection oil engines drive direct current generators which in turn furnish power to a 375-horsepower 120 revolutions per minute motor. The generator, the propelling motor, and auxiliary motors were furnished by the General Electric Company.

The Brilliant has an over-all length of 180 feet, width of 31 feet, molded depth of 17 feet, and a capacity of approximately 10,000 barrels. This is the fourth oil engine-electric driven vessel to be placed in operation by the Atlantic Refining Company.

WORLD SHIPBUILDING DECLINES TOWARDS END OF 1924

Merchant shipping under construction in the world on December 31, 1924, aggregated 2,470,436 gross tons, or about 4 per cent less than on September 30, 1924, according to Lloyd's Register of Shipping, says the Transportation Division of the Department of Commerce. Great Britain and Ireland, which at the close of the third quarter were building 356,000 tons more of shipping than all the other maritime countries combined, were at the close of the year building 123,000 tons less than the other countries.

Shipbuilding in the United States during the period under review declined 6000 tons. The total for the United States is far below the pre-war aggregate, and less than at any time since the war.

SCOUT CRUISER MEMPHIS

The light cruiser Memphis, Uncle Sam's newest fighting ship, returned to the Cramp Shipyard Wednesday, January 14, after passing her official trials with flying colors. Under the personal direction of J. Harry Mull, president and general manager of the William Cramp & Sons Ship & Engine Building Company, and in the presence of the full Naval trial board headed by Admiral Guy H. Burrage, the big vessel more than duplicated the performances of her four sister ships built at the same yard. The official records show that an average speed of 34.53 was maintained in a 4-hour high speed test. The engines developed 94,200 horsepower, well in excess of the 90,000 required under the contract. Propeller revolutions per minute were 369.6.

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Bids have been asked by Gibbs Bros., naval architects of New York, on the conversion from coal to oil of the 150-foot ocean-going tug Moositaunk, recently purchased by the Matson Navigation Co. from the Shipping Board. The tug is of 800 horsepower and the conversion specifications provide for the installation of two boilers and bunker space

IN PACIFIC COAST SHIPYARDS

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for 200 tons of oil. Bids are to be opened January 20 at New York.

The Munson Steamship Line recently issued bonds amounting to \$5,000,000, part of which will be used in the purchase of new ships.

The Shipping Board recently approved the sale of four Lake-type freighters to the McDougall Terminal Warehouse Company, Duluth, Minn. The sale was made for the lump sum of \$100,000 for the four steamers with the understanding that the vessels will be reconditioned and altered to the extent of \$60,000 for each ship within four months, the undertaking in this respect to be along the general lines of the form of diesel conversion contract. These vessels are the Lake Flovilla, Lake Faristell, Lake Fresco, and Lake Frohna. They are of 4165 deadweight tons, equipped with triple expansion engines of 1060 indicated horsepower. It is the intention of the purchasers at a later date to lengthen the vessels.

Bids for the construction of a 13,000-ton submarine will be called for by the Brazilian naval attaches at Washington and Rome, according to instructions of the Minister of Marine. These bids are not to be opened until May, 1925.

President Coolidge has signed the bill passed by the Senate authorizing the appropriation of \$925,000 for the construction of a new and modern vessel to replace the veteran Coast Guard cutter Bear in the Alaskan service.

L. E. Caverly, chief engineer of

the Los Angeles Shipbuilding & Drydock Corporation, San Pedro, California, has been appointed naval architect to design the two fireboats to be built by the Los Angeles Harbor Commission.

It is reported that the Los Angeles Harbor Commission will place an order with the Marine Construction Company of Seattle for two harbor dredges.

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IN ATLANTIC COAST SHIPYARDS

**SHIP REPAIRING
SHIP BUILDING
RECONDITIONING
ENGINE REPAIRS**

Recent Contracts

Hanlon Drydock & Shipbuilding Co., Oakland, Calif., has been awarded contract for a self-propelled oil barge of 2500 barrels capacity for the Associated Oil Company, powered with two 80 horsepower Atlas-Imperial diesel engines. Contract price \$72,572.

Crosby Marine Railway, Salmon Bay, Seattle, has an order for a new automobile ferryboat for the Crosby Direct Line Ferries, Inc., to operate from Alki Point to Manchester across Puget Sound. The ferryboat was designed by L. H. Coolidge, naval architects of Seattle, who will superintend her construction. The vessel will have a capacity for 65 automobiles and will be equipped with a 600-horsepower heavy oil engine which was built for the Chilean government for installation in a naval vessel, the contract being later cancelled in accordance with the disarmament agreement. This ferryboat will cost about \$250,000.

Newport News Shipbuilding & Drydock Company has been awarded contract by the Clyde Line for another passenger and cargo steamer to take the place of the Mohawk, recently damaged by fire and sunk off Lewes, Del. The new ship, which is to be completed and ready for service by January 1, 1926, is to be of the same type as the Cherokee and Seminole, now under construction at this plant, and will have passenger capacity of 300 first-class and 80 steerage with 120 in crew. The vessel will be 402 feet over-all, 54 feet molded beam, 23 feet 6 inches molded depth to main deck, 18 feet loaded draft, 4200 shaft horsepower, speed of 15 to 16 knots, 2700 tons deadweight capacity, cargo capacity 280,000 cubic feet, and will be propelled by steam power operating through reduction geared turbine drive, steam furnished by four Scotch single ended boilers, oil fired.

Mathis Yacht Building Company, Camden, N. J., has an order for fifteen 75-foot motor patrol boats for the U. S. Coast Guard at a cost of \$18,675 each.

Gibbs Gas Engine Company, Jacksonville, Fla., has an order for ten 75-foot motor patrol boats for the U. S. Coast Guard at a cost of \$19,945 each.

Defoe Boat & Motor Works, Bay City, Mich., have an order from the U. S. Coast Guard Service for ten steel boats, 98 feet between perpendiculars, 23 feet beam, 6 feet loaded draft, of 210 tons deadweight, to be propelled by 300 horsepower diesel engines.

Great Lakes Engineering Works, River Rouge, Mich., has an order for a bulk freighter for the Cleveland Cliffs Steamship Co. of the same dimensions as the Joseph H. Frantz, keel of which was laid last October.

Midland Barge Company, Midland, Pa., has an order for a freighter 596 feet over-all, keel of which will be laid in the spring.

Keel-layings

Bulk freighter, Great Lakes Engineering Works, River Rouge, Mich., for the Wilson Transit Co., Dec. 23.

Dolly Barrett, steel flush deck barge, Midland Barge Co., Midland, Pa., for Barrett Line, Cincinnati, Dec. 29.

Dredge hull, New York Shipbuilding Corp., United Dredging Co., Dec. 24.

Launchings

Hawaiian Standard, oil tanker, Bethlehem Shipbuilding Corp., Union Plant, for Standard Oil Company (Calif.), Jan. 8.

Coast Guard Cutters Nos. 259, 260, 261 by A. W. de Young Boat & Shipbuilding Co., Inc., Alameda, Jan. 10.

Carfloat, Bush Terminal by Bethlehem Shipbuilding Corp., Harlan Plant, Dec. 30.

Murray Hulbert and Edward Reigelman, ferryboats, Tebo Yacht Basin Co., Brooklyn, for City of New York, Dec. 27.

Deliveries

New Orleans, ferryboat, Bethlehem Shipbuilding Corp., Union Plant, to Southern Pacific Co., Dec. 31.

C. G. No. 255, A. W. de Young Boat & Shipbuilding Co., Inc., to Coast Guard, Dec. 26.

Carfloat, Bethlehem Shipbuilding Corp., Harlan Plant to Erie Railroad, Dec. 12.

Steel dump scow, Bethlehem Shipbuilding Corp., Sparrows Point to Arundel Corp., Dec. 17.

Oil Barge, Marietta Manufactur-

THOMAS G. BAIRD

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ing Co., Point Pleasant, W. Va., to Standard Oil Co. (O.), Dec. 15.

Dredge, Nashville Bridge Co. to W. T. Hardison & Co., Jan. 6; dredge boat hull to T. L. Herbert & Sons, Dec. 12; ferryboat to Bisso Ferry Co., Jan. 2.

Two carfloats, New York Shipbuilding Corp. to Lehigh Valley R. R. Co., Dec.

Steel tugboat, Spedden Shipbuilding Co., Grace Line, Inc., Dec. 27.

Two maneuver boats, Charles Ward Engineering Works to U. S. Engineers, Dec. 31.

Repair Awards

Todd Dry Docks, Inc., Seattle, has, during the past month, been awarded three important reconditioning jobs on the President Jefferson, President Jackson, and President Grant. In each case the bidding for the work was between the Todd plant and the Navy Yard at Bremerton, Washington. The Navy

Yard underbid the private yard in each instance, but in accordance with the decision of the Shipping Board to award contracts to private firms when the difference in the cost is not too great, the contracts were awarded to the Todd plant.

Bids submitted on each of the three vessels were as follows:

On President Jefferson the Navy Yard bid \$131,110 and the Todd Dry Docks, Inc., \$136,570.

On the President Jackson Todd Dry Docks, Inc., bid \$135,000.

On the President Grant the Navy Yard bid \$155,280 and the Todd Dry Docks, Inc., \$171,764.

A. W. de Young Boat & Shipbuilding Co., Alameda, Calif., recently repaired the San Francisco Bay freighter South Shore 1, which was wrecked in collision with the Dumbarton Bridge, cost of work \$3000.



Shipyard Notes

The Richmond Construction & Engineering Co., Richmond, California, is the name of a new boat building plant on San Francisco Bay. J. C. Lengille, formerly connected with the A. W. de Young Boat & Shipbuilding Co., Alameda, and Alfred Narfe have leased three acres on the Richmond inner harbor and have started construction of the yard. Mr. Lengille reports that he has orders for a scow and eleven motor boats and passenger carrying launches.

Wm. Cryer, boat builder, at the foot of Dennison street, Oakland, Calif., on January 8 launched the 50-foot towboat Pateo for the Berkeley Transportation Company, and a sister ship for W. R. Grace & Co. for South American service. Both towboats are equipped with Standard gas engines of 75 horsepower.

Alan Cunningham has contract for the deck machinery for the new tanker Hawaiian Standard, launched at Bethlehem's San Francisco yard January 8. Mr. Cunningham has a new plant on the site of the old Skinner & Eddy Yard No. 1 at Seattle. He also built the combination cargo winch and anchor windlass equipment for the Inter-Island Steam Navigation Co.

When the Burrard Drydock & Engineering Company's big floating drydock at Vancouver, B. C., is completed next March, it is expected that the Empress liners of the Canadian Pacific Steamships, Ltd., will be docked at this plant rather than

at Hongkong, which is the present practice.

T. Sturgis Barnes, rated as one of the ablest men in shipbuilding circles on the Pacific Coast, entered the employ of the Moore Dry Dock Company the first of the year. Mr. Sturges was formerly connected with the Bethlehem plant at San Pedro, resigning that position December 1.

The U. S. Engineers asked for bids for the removal of the hulk of the Associated Oil Company's tanker, Alden Anderson, which burned and sank near the company's plant at Avon on the upper part of San Francisco Bay last October. Bids will be opened January 31.

The Western Boat Building Company, Tacoma, Washington, has been awarded contract for building a new automobile ferry for use in the Gig Harbor-Tacoma route of the Tacoma Ferry Company. The vessel will have capacity for 30 automobiles, will be 124 feet long, 40 feet beam, and cost about \$36,000.

Wm. Muller, one of the leading boat builders of Southern California, with boat yards at Wilmington, recently started construction of a 1500-ton rock barge for the Wilmington Transportation Company to cost about \$50,000. Mr. Muller is building two other barges for this company of smaller capacity.

O. B. Kibele, well known in Pacific Coast shipbuilding circles, has

recently acquired a one-half interest in the San Pedro Marine Engineering Works. Besides ordinary vessel repairs this company will handle marine diesel engine work for the Western Engineering Co. and the Pacific Diesel Engine Co.

William Cramp & Sons Ship & Engine Building Company has announced that keel for the steamer Malolo, passenger and freight liner for the account of the American Hawaiian Steamship Company, will be laid next June.

Submarine V-2 was launched the early part of January at the Portsmouth Navy Yard, giving the American Navy another one of the most effective weapons of offense and defense. The sister ship V-1 was launched two months ago. The submarines are the highest development of this type of craft. They are 341 feet long and 27 feet broad, 2164 tons displacement and capable of making a surface speed of 21 knots. Their under water speed is rated at 9 knots. The armament of the V-2 consists of six 21-inch torpedo tubes, one 5-inch 51 caliber rifle, and two Lewis machine guns.

The Moore & McCormick Company have decided to convert six of their oil burning vessels to coal burners. These vessels are all in their Commercial Line services. The oil burners were installed on a convertible basis and little expense and trouble will be experienced in converting to oil burners. A saving of \$75 a day per ship is the estimated saving to be effected.



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Kearny, N. J.
Purchasing Agent: R. S. Page.
El Oceano, hull 81, freight stmr. Southern Pa-

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PLANT KEARNY, N. J.

SALES OFFICE 26 BEAVER ST., NEW YORK

efic Co., 433 IHP; 56 beam; 26 loaded draft; 143, loaded speed; 750 DWT; turbine tngs, 600 IHP; 4 B&W boilers, keel Sept 22 24.
No name, hull 8, large Pan American Petroleum Co., 111 IHP, 30 beam, 10 loaded draft; 40 DWT.

GREAT LAKES ENGINEERING WORKS

River Rouge, Mich.

Purchasing Agent: Chas. Short.
Jas. H. Frantz, hull 248, bulk freighter, Cleveland S. S. Co., Cleveland, 618 IHP, 592 IHP; 62 beam; 32 depth; draft, 13,500 DWT; 12 Scotch boilers, keel Jan 24, launched Oct 18 24, deliver Mar 25, est.
No name, hull 249, bulk freighter, Wilson Transit Co., 500 IHP, 60 beam; 20 loaded draft; 12 Scotch boilers, 12,000 DWT; T-1 2600 IHP; 4 Scotch boilers, 13 ft 6 in by 11 ft keel Dec 23 25, launch April 25, est, deliver May 25, est.
No name, hull 250, bulk freighter, Cleveland S. S. Co., Cleveland, 618 IHP, 592 IHP; 62 beam; 32 depth; draft, 13,500 DWT; 12 Scotch boilers, keel Feb 25, est, launch June 25, est, deliver May 25, est.

HOWARD SHIP YARDS & DOCK COMPANY

Jeffersonville, Ind.

Purchasing Agent: Jas. F. Howard.
Steel tow boat, 140 long, 32 beam; 6 1/2 depth hold.
Two steel river boats, U. S. government.
No name, Agiers Public Service, Inc., New Orleans, 150 feet 6 inches long.
No name, ferryboat, sister to above.

MANITOWOC SHIPBUILDING CORPORATION

Manitowoc, Wis.

Purchasing Agent: H. Meyer.
No name, hull 214, twin screw car ferry, American Arbor Railway Co., 360 IHP; 36 beam; 16 loaded draft; 15 mi speed; 3000 gross tons; T.E. engs; 3 IHP; 4 Scotch boilers, 14 ft 6 in; keel Oct 24, est, deliver Mar 25, est.
No name, tug, Milwaukee Tugboat Line; 75 IHP; 21 beam; 10 loaded draft; 12 mi speed; 800 gross tons; 500 IHP engs; launch Jan 25, est; deliver Apr 25, est.

MARIETTA MANUFACTURING CO.

Point Pleasant, W. Va.

Purchasing Agent: S. C. Wilhelm.
No name, hull 138, sternwheel towboat; 125x30x52, tandem comp engs; Western rivers; return tubular boilers; keel May 24; launched Oct 24.
No name, hull 139, ferryboat; 141 ft long; 30 ft beam; 11 ft draft; tandem comp engs; Western rivers; return tubular boilers; keel May 24; launch Feb 25, est, deliver April 25, est.
No name, hull 142, oil barge, Standard Oil Co. of Ohio, 10x15x56, keel Oct 15 24; launched Dec 14 24, delivered Dec 15 24.

MIDLAND BARGE COMPANY

Midland, Pa.

Purchasing Agent: H. S. Neal.
Del. River steel flash lock barge, Barrett Line Co., 27 ft long; 36 ft beam; 8 ft draft; 100 DWT; keel Dec 29 24; launch Feb 1 25, est.
Steel barge, sister to above; keel Jan 25, est, launch Feb 1 25, est.
Steel barge, sister to above; keel Feb 25, est, launch Mar 1 25, est.
Steel barge, sister to above; keel Feb 25, est, launch Mar 1 25, est.
Steel barge, sister to above; keel Feb 25, est, launch Mar 1 25, est.
Steel barge, sister to above; keel Feb 25, est, launch Mar 1 25, est.

MIDLAND SHIPBUILDING COMPANY, LTD.

Midland, Ontario

Purchasing Agent: R. S. McLaughlin.
Great Lakes bulk freighter, Great Lakes Transit Co., 610 IHP; 60 beam; 20 loaded draft; 3 Scotch boilers; keel May 24; launch Nov 19 24, est.
No name, hull 4, bulk freighter, 610 IHP; keel Oct 24, est, launch Dec 24, est.

NASHVILLE BRIDGE COMPANY

Nashville, Tenn.

Purchasing Agent: Le. F. Weger.
No name, hull 1, bridge, 110 ft long; keel Jan 24, launch and delivered Jan 25.
No name, hull 2, bridge, 110 ft long; keel Jan 24, launch and delivered Jan 25.
No name, hull 3, bridge, 110 ft long; keel Jan 24, launch and delivered Jan 25.
No name, hull 4, bridge, 110 ft long; keel Jan 24, launch and delivered Jan 25.
No name, hull 5, bridge, 110 ft long; keel Jan 24, launch and delivered Jan 25.
No name, hull 6, bridge, 110 ft long; keel Jan 24, launch and delivered Jan 25.

140 IHP; 59 beam; 8 loaded draft; launched Nov 20 24, delivered Jan 25.

Hull 90, deck barge; 180 IHP; 36 beam; 7 loaded draft; keel Dec 24, launch Jan 15 25, est, deliver Jan 15 25, est.

Chamberlin, hull 91, steamboat hull, principals not named, 140 IHP; 31 beam; 5 loaded draft; keel May 1 25, est, launch and deliver June 15 25, est.

Nashville B., hull 92, diesel towboat, builders' account; 110 IHP; 28 beam; 5 loaded draft; 400 IHP diesel engs; keel April 25, est; launch May 15 25, est.

No name, hull 93, barge, principals not named; 120 IHP; 30 beam; 7 loaded draft; keel Mar 1 25, est, launch and deliver April 25, est.

NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY

Newport News, Va.

Purchasing Agent: Jas. Plummer, 233 Broadway, New York City.

Robert E. Lee, hull 277, freight and passenger stmr, Old Dominion Steamship Co.; 3750 IHP; 53 beam; 29-9 depth; speed 16 knots; 2100 DWT; Newport News-Curtis turbines, 4750 SHIP; B&W boilers; keel Mar 12 24; launched Oct 10 24, deliver Jan 25, est.

Cherokee, hull 274, combination steamer, Clyde S. S. Co.; 387-6 IHP; 54 beam; 31-6 depth; 143, loaded speed; 2600 DWT; Newport News Curtis engs; 4200 SHIP; 4 Scotch boilers; keel Aug 12 24; launch Feb. 25, est; deliver June 25, est.

Seminole, hull 275, sister to above; keel Sept 9 24; deliver Aug 25, est.

Hull 280, freight and passenger steamer, New York and Porto Rico Steamship Co.; 412 IHP; 59 ft 6 in beam; 35 depth; speed 15 1/2 knots; Newport News-Curtis turbines; 6000 SHIP; Scotch boilers; keel Jan 25 24, est.

Nenemoosha, hull 281, yacht for Alfred I. du Pont; 130 IHP; 22 beam; twin screw; diesel engs; keel Oct 24; launched Nov 22 24; deliver Jan 25, est.

Norfolk, hull No. 282, dredge hull, Atlantic Gulf & Pacific Co. of New York; 162 long; 38 beam; 14 depth; keel Nov 19 24; deliver Feb 25, est.

Hull 283, freight house barge, The Chesapeake & Ohio Railway Co.; 100 ft long; 30 ft beam; 8 ft 6 in deep; keel Dec 9 24; launch Jan 25, est, deliver Feb 25, est.

Hull 284, sister to above; keel Dec 9 24; launch Jan 2, est; deliver Feb 2, est.

Hulls 285-286, twin steel barges, U. S. Army Engineers, Wilmington, Del.; 60 ft long; 22 beam; 4 ft depth; keel Feb 25, est.

No name, hull No. 287, combination steamer, Clyde S. S. Co.; 402 IHP; 54 beam; 31-6 depth; 23 ft 6 in molded depth; 18 loaded draft; 15 1/2 speed; 2760 DWT; 4200 SHIP; 4 Scotch boilers, oil fired, turbine drive; deliver Jan 26.

NEW YORK SHIPBUILDING CORP.

Camden, N. J.

Purchasing Agent: L. G. Buckwalter.
Hulls 300-301, two earfloats, High Valley R. R. Co.; 2 tracks, 185 ft long; keels Oct 24; delivered Dec 24.

Hull 302, earfloat, Chesapeake & Ohio Ry. Co.; 4 tracks; 370 ft long; keel Nov 24 24.

Hull 303, barge, International Cement Corp.; 162 ft long, keel Dec 24.

No name, hull 304, diesel tanker; 480 ft long; 9500 gross tons; 13,000 DWT; New York-Werkspoor engs, 3200 IHP.

Hull 305, dredge hull, United Dredging Co.; 170 ft long; keel Dec 24 24.

THE PUSEY AND JONES CO.

Wilmington, Del.

Purchasing Agent: James Bradford.
District of Columbia, hull 1028, steel comb. stmr, Norfolk & Washington Smkt. Co., Washington, D. C.; 297-7 IHP; 51 beam; 13 loaded draft; about 18 mi speed; 1600 DWT; single screw; 4 cyl TE engs, 2400 IHP; 4 Scotch boilers; 12 1/2 keel May 24; launched Sept 13 24, deliver Feb 16 25, est.

SPEDDEN SHIPBUILDING CO.

Baltimore, Md.

Purchasing Agent: W. I. Collison.
Hull 260, steel hull tugboat, Grace Line, Inc., N. Y.; 76-6 IHP; 19 beam; 10 depth; 320 IHP Ingersoll Rand diesel engs; keel July 15 24; launched Oct 10 24, delivered Dec 27 24.

STATEN ISLAND SHIPBUILDING COMPANY

Staten Island, N. Y.

Purchasing Agent: R. C. Miller.
No name, hull 749, steel diesel electric tugboat, Penn. R. R. Co.; 105 IHP; 24 beam; 13 1/2 loaded draft.

No name, hull 750, steel diesel electric tugboat, Atlantic Refining Co.; 94 IHP; 21 beam; 11 loaded draft.

No name, hull 751, sister to above.
No name, hull 752, sister to above.

TEBO YACHT BASIN COMPANY, Brooklyn, N. Y.

Purchasing Agent: R. C. Smith.
Murray Hulbert, hull 32, ferryboat, Dept. of Plant Structure, City of New York; 148 IHP; 53 ft beam over guards, 37 ft 6 in beam molded; 9 ft 9 in loaded draft; 11 knots loaded speed; 588 gross tons; comp engs; 2 B&W boilers, 3182 sq ft heating surface; keel Sept 4 24; launched Dec 27 24; deliver Mar 15 25, est.

Edward Reigelman, hull 33, ferryboat, City of N. Y., sister to above; keel Sept 4 24; launched Dec 27 24; deliver Mar 15 25, est.

No name, hull No. 34, ferryboat, City of N. Y., sister to above; keel Sept 4 24; deliver April 15 25, est.

No name, hull No. 35, ferryboat, City of N. Y., sister to above.

No name, hull No. 36, ferryboat, City of N. Y., sister to above.

THE CHARLES WARD ENGINEERING WORKS

Charleston, W. Va.

Purchasing Agent: E. T. Jones.
Lookout, hull 33, towboat, U. S. Engineers, Nashville, Tenn.; 116 ft long; 29 ft beam; 5-6 depth; 2 surface condensing tandem comp engs, 300 IHP; 1 watertube boiler; coal burning; induced draft; keel April 24.

Hull 35, maneuver boat, U. S. Engineers, Huntington, W. Va.; 60 ft long; 20 ft beam; 3 ft 4 in depth; keel Sept 18 24; launched Nov 22 24; delivered Dec 31 24.

Hull 36, sister to above; keel Sept 20 24; launched Nov 25 24; delivered Dec 31 24.

Repairs

BETHLEHEM SHIPBUILDING CORP., LTD. San Francisco

Drydock, paint, misc. repairs: Katherine Donovan, India Arrow, Yellowstone, Helvig Vinnen, President Cleveland; Engine, boiler, hull: F. A. Warner, Chapas, Tahiti (also steward's dept.), Ecuador (also dock and paint); Engine repairs: J. C. Donnell, Maui, Greystone, Samoa, George Washington (also hull); Telemotor repairs: K. R. Kingsbury, India Arrow, Pipe repairs: Henry S. Grove, Director, Treyton, 1 cast iron propeller; Regulus, Tail shaft; Olean, Furnish and install 1 bow rudder; Calistoga, Misc. repairs: Texan, H. T. Harper, Bolivar, Standard Service, Lio, Hill Hubbard, Georgian, Richmond, Belgenland, W. S. Miller, Olinda, Napa Valley, Valve repairs: W. B. Storey, Caulk leaks in tank tops; Yankee Arrow, 6 ball-bearing thrust collars, etc.; Santiam, Whistle repaired; Kroonland, 2 burger heads; Cedarbank, Make 1 galley stack; Capt. A. F. Lucas, Alterations and misc.; K. R. Kingsbury, Turbine blading and shrouding; President McKinley, Renew ventilator cowls; F. J. Luckenbach, 2 H. P. piston rings, etc.; Colombia, 2 14-in. C. S. plates; Alaska Standard, Misc.; Sagadahoc, Carlos, Tejon, Yorba Linda, Charlie Watson, West Carmona, Virginian Solon, J. B. Aug. Kessler, Lebec, Aurora, Bandon, Dist. of Columbia, Iowan, Standard Oil Barge No. 7, Curacao, H. C. McCormick, Panaman, Rose City, Finland, Oaxaca, Sierra.

PUGET SOUND NAVY YARD Bremerton, Wash.

Docking and misc. repairs: Idaho, Nevada, Somers, J. E. Burnes, Misc. repairs: Mississippi, Seattle, Meyer, Misc. repairs incidental to operation as district craft: Mahopac, Tatnuck, Swallow, Troquons, Pawtucket, Sotoyomo.

TODD DRY DOCKS, INC. Seattle, Wash.

Damage repairs: Admiral Watson, Heavy weather damage repairs: H. F. Alexander, Dock for survey: Falls of Clyde, Alterations and repairs: President McKinley, Change propeller blades, misc.; Edmore, Furnish hatch covers: Julia Luckenbach, Misc. repairs: Admiral Sefton, Kulhan, West Nimrod.

VICTORIA MACHINERY DEPOT CO., LTD. Victoria, B. C.

Purchasing Agent: G. S. Ammell.
Repair entire bottom damage due to stranding (66 plates renewed); stmr. Tatjana, Clean, paint, supply and install new propeller and tail shaft, renew 6 plates, misc. repairs; stmr. Brown, Clean, paint, new propeller, 3 new plates; stmr. Green, Clean, paint, hull, engine, boiler repairs, new tail and shaft stmr. Canadian Freighter, Clean, paint, propeller repairs; stmr. Princess Maquinta, Boiler repairs; tugs Soray, Sadie, Olive M. Clean, paint, new propeller, hull repairs; stmr. Gray.

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

PACIFIC TRADERS' STEAMSHIP CORPORATION

ANNOUNCEMENT of the sale by the United States Shipping Board of five vessels in the Pacific-East Coast of South America service and four more in the Pacific-Australasian service to James Rolph, Jr., Mayor of San Francisco, representing the Pacific Traders' Steamship Corporation, has been well received in shipping circles. The sale is regarded as evidence of the intent of the Shipping Board to liquidate the fleet, provided private owners can be found to purchase the vessels at reasonable terms.

Winthrop L. Marvin, vice-president and general manager of the American Steamship Owners' Association, is reported as having issued the following friendly statement: "Mr. Rolph is well known to shipping owners on the Atlantic Coast as a thoroughly competent shipping executive. He commands the confidence of the financial interests of the community, having proved by his own career his ability to handle ships successfully in the Pacific trade. It is highly gratifying that the Shipping Board has assented to the transfer of these two lines to private control, inasmuch as it constitutes a step on the part of the Government-owned lines to private capital as soon as may be feasible."

The vessels mentioned have been represented by Swayne & Hoyt, Inc., as managing operators. This firm has maintained the South American route for four and one-half years and the Australian line for three years. Twelve vessels have been serving in the two routes, among them some well-known carriers, the Hollywood, West Notus, West Cactus, West Camargo, West Jappa, Bakersfield, West Calera, West Nilus, Las Vegas, West Nivaria, West Islip and West Cahokia.

H. M. GLEASON

Captain H. M. Gleason, assistant general manager in charge of operations of the Pacific Mail Steamship Company, returned to the San Francisco head office on January 19, after spending six weeks in Washington, D. C., representing the Pacific Mail interests in negotiating for the purchase of five Shipping Board 535-type passenger and freight vessels now in the San Francisco-Orient run. Captain Gleason may again go to Washington when negotiations are carried further into the matter of bid and sale.

SHANGHAI BOUND

Charles A. Perkes, freight traffic manager at Shanghai for the Dollar round-the-world service, sailed from San Francisco aboard the steamer President Adams on January 31, accompanied by his bride. They will reside in Shanghai, where Mr. Perkes has represented the Dollar organization for several years.

SMALL CRAFT SALES

Crowley Launch & Tugboat Company and the Crowley Shipyard, San Francisco and Oakland, recently purchased a group of Government cutters, launches, and small sailing craft, overhauled them, in some instances converted to diesel power, and have sold a number to Mexico and South America for river service.

S. F. CONFERENCE

The semi-annual meeting of the Pacific Westbound Conference convened in San Francisco on January 19, E. J. A. Watts, secretary, presiding. The regular meetings, previously held quarterly, will now be held semi-annually. The business of the meeting was given over to discussion of minor local and overland rate projects. The Pacific Westbound Conference will soon meet at New Orleans with the Atlantic lines.

COLUMBIA-PACIFIC

D. K. Dawson, vice-president and general manager of the Columbia-Pacific Shipping Company, and C. F. Dant of the firm of Dant & Russell, lumber exporters, recently returned home to Portland, Oregon, after a business trip to San Francisco.

JOINS MANN STAFF

Edward B. Barry, for the last three years connected with Wilcox, Peck & Hughes, Inc., and with the firm of Johnson & Higgins since the amalgamation of the two houses, serving as average adjuster, has resigned and joined the staff of H. R. Mann & Company, general insurance brokers, as assistant to A. B. Knowles, marine underwriter.

ROY CROWDER

Travel from the mainland to the Hawaiian Islands will be the heaviest in the history of the island trade, according to Roy V. Crowder, passenger traffic manager of the Los Angeles Steamship Company, who recently returned to his San Francisco headquarters after a trip to Honolulu. Crowder reports that Hawaiian business houses predict a prosperous year, with improved conditions in every branch of trade.

BALFOUR, GUTHRIE

Balfour, Guthrie & Company are moving their Seattle offices on February 1 to the fourteenth floor of the new Dexter Horton building. For ten years the business was conducted at the Stuart building.

J. J. TYNAN VISITS HAWAII

J. J. Tynan, vice-president and general manager of the Bethlehem Shipbuilding Corporation, accompanied by his wife and son, J. J. Tynan, Jr., sailed from San Francisco January 21 on the Matson liner Manoa, bound for the Hawaiian Islands.

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S. S. COLOMBIA—Sails JAN. 8	S. S. ECUADOR—Sails JAN. 21
S. S. VENEZUELA—Sails JAN. 29	S. S. COLOMBIA—Sails FEB. 11
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S. S. SANTA ROSA—Sails FEB. 12

From New York to Los Angeles, San Francisco, Portland and Seattle

S. S. SANTA MALTA—Sails JAN. 27
S. S. SANTA BARBARA—Sails FEB. 12

PANAMA SERVICE—Passengers and Freight—from San Francisco to Mexico, Central America and Canal Zone
S. S. CORINTO—Sails FEB. 3

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J. R. Fitzgerald, agent.

215 Market street. Phone Douglas 9560.

FREIGHT ONLY

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston. (See page 12)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me. (See page 16)

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.

Robert Dollar Building, 311 California street.

Phone Garfield 4300.

PASSENGERS AND FREIGHT.

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service. Regular sailings between San Francisco, Seattle, Vancouver, B. C., Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me. (See page 10)

GARLAND STEAMSHIP CORP.

General Steamship Corp., agents.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Intercoastal Service. Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston. (See page 16)

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.

201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 21 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile. (See page 14)

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.

215 Market street. Phone Kearny 5100.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York and Baltimore and Los Angeles, San Francisco.

Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla. (See page 12)

PACIFIC MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 23 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle. (See page 10)

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Passenger Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma. (See page 14)

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,

311 California street. Phone Garfield 6760.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.

230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

F. C. Bennett, Pacific Coast manager.

110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.

Mutual Life Building.

FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston. (See page 12)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

ON Tuesday evening, January 20, the Maritime Civic League of San Francisco Bay held its first membership meeting, with President Captain W. J. Peterson in the chair. The secretary, J. P. Williams, reported a rapidly growing membership, with a present enrollment of 500.

The Maritime Civic League of San Francisco Bay is a body formed for the express purpose of projecting into civic, state and national politics the maritime fraternity of San Francisco and the Pacific Coast. Its membership is composed of the owners and operators of ships and the executives of all industries connected with the business of marine transportation.

At the first meeting, four important resolutions were unanimously adopted:

First, the Maritime Civic League of San Francisco Bay, realizing the great debt owed by maritime interests of the Pacific to the late Congressman Julius Kahn, heartily endorses Mrs. Kahn as successor to her husband.

Second, the Maritime Civic League of San Francisco Bay is unalterably opposed to the repeal or amendment of California's Criminal Syndicalist Act.

Third, the Maritime Civic League of San Francisco Bay goes on record as being opposed at this time to the transfer in ownership or control of the San Francisco waterfront from the State of California to the City of San Francisco.

Fourth, the Maritime Civic League of San Francisco Bay is opposed to any further tinkering with the United States Constitution by placing therein legislation which should more properly take the form of statutes in the several States, and is particularly, at this time, opposed to the introduction into the Constitution of the Child Labor Amendment, this action being taken purely from the standpoint of safeguarding the constitutional liberties of the States and the citizens thereof.



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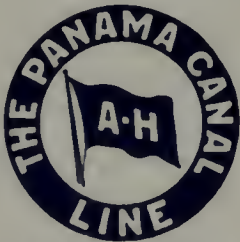


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215 MARKET ST. **SAN FRANCISCO** **CALIFORNIA**

INTERCOASTAL

SAILINGS—Every 10 days between Seattle, Portland, San Francisco and Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

(See page 16)

DOLLAR STEAMSHIP LINE

Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk.

(See page 10)

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

(See page 16)

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 21 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

(See page 14)

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Baltimore, San Diego, Los Angeles, San Francisco, Portland, Tacoma and Seattle; monthly to Jacksonville, Fla.

(See page 12)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

Lobby 4 Central. Phone Elliott 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Passenger Office, 619 Second avenue.

Pacific Steamship Company, agents.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—Intercoastal.

Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

(See page 14)

TRANSMARINE LINES

Transmarine Corporation.

4421 White Building. Phone Elliott 6127.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.

Arctic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

Spokane street terminal. Phone Elliott 6657.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

(See page 12)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

(See page 16)

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Sailings between Los Angeles, San Francisco, Seattle, Vancouver, B. C., New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

(See page 10)

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
541 South Spring street.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

(See page 16)

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street. Phone Main 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 21 days from Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

(See page 14)

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone Metropolitan 6140.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York and Baltimore and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

(See page 12)

PACIFIC MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.

Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.

Every 23 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

(See page 10)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone VAndyke 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.

Freight Offices: Pacific Steamship Company.

PACIFIC WESTBOUND CONFERENCE

H. G. Weir, representing the Nippon Yusen Kaisha, with headquarters in Seattle, was elected general chairman of the Pacific Westbound Conference at the recent semi-annual meeting held in San Francisco. Mr. Weir succeeds George Chapin of Toyo Kisen Kaisha, who served as chairman during the past six months. G. H. Wagner of the Osaka Shosen Kaisha was appointed assistant general chairman. The next conference will be held at Tacoma on June 8.

CLAIM AGENT PASSES

L. F. Beidelman, Los Angeles freight claim agent of the Luckenbach Steamship Company, passed away last month at his home in Sierra Madre. Biedelman had twenty years' service with the American transportation lines. He joined the Luckenbach staff three years ago as head of the claims department.

RADIO CORPORATION

For the first time in any port the New York Central Railroad recently effected the dispatching of a tug boat in New York harbor by wireless as the commencement of a month's test handled in cooperation with the Radio Corporation of America. The system is devised to replace the present practice of directing the movements by the chief dispatcher of railroad tugs and steam lighters by land telephone orders communicated to the captains of these vessels when tied up to piers throughout the metropolitan harbor district. The object sought by the New York Central in utilizing rapid radio communication is to speed up the movement of that proportion of its traffic handled by marine equipment. G. Harold Porter, general superintendent of the marine department of the Radio Corporation of America, and W. B. Pollock, manager of the New York Central, marine division, are directing the important tests.

T. K. K. DOCKING AT SHANGHAI

All liners of the Toyo Kisen Kaisha's trans-Pacific fleet are now docking at Shanghai instead of Woosung, which is fourteen miles from Shanghai, at which point the T. K. K. vessels have been docking in the past. Under the new arrangement the dock is but twenty minutes from the Shanghai business district.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.

Transportation Bldg. Phone 821-336.

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Fast Service to New York via Panama Canal and Havana

Regular Dependable Coast to Coast Passenger and Freight Service
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WESTBOUND

From New York, Pier 61, N. River	
MANCHURIA	Feb. 12
MONGOLIA	Feb. 26
FINLAND	Mar. 12
MANCHURIA	April 2
MONGOLIA	April 16

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.	
KROONLAND	Jan. 31.....Feb. 2
FINLAND	Feb. 14.....Feb. 16
MANCHURIA	Mar. 7.....Mar. 9
MONGOLIA	Mar. 21.....Mar. 23
FINLAND	April 4.....April 6

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Atlantic Transport Line to LONDON. White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

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LOS ANGELES
510 South Spring St.

PACIFIC STEAMSHIP CO. (The Admiral Line),
SAN FRANCISCO
60 California St.

General Freight Agents Pacific Coast
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322 Citizens National Bank

SEATTLE
L. C. Smith Bldg.

PORTLAND
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Telephone: Sutter 3414

INTERCOASTAL

322 Citizens National Bank.
Passenger Offices: 510 So. Spring st. Phone 877-511.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.
(See page 14)

TRANSMARINE LINES

(Transmarine Corporation.)

G. T. Darragh, agent.

A. G. Bartlett Bldg. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.

407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.

Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.

Railway Exchange Building.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.
(See page 12)

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me.
(See page 16)

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.
(See page 16)

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.

Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 21 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.
(See page 14)

MUNSON-McCORMICK LINE

McCormick Steamship Company.

181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York and Baltimore and Los Angeles, San Francisco, Portland and Seattle; monthly to Jacksonville, Fla.
(See page 12)

PACIFIC MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.

Yeon Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 14 days, Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland, and Seattle.
(See page 10)

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

1008 Spalding Building.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Pacific Steamship Company, freight agents.

Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.
(See page 14)

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 2377.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.
(See page 16)

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Halifax. Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.

402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.
(See page 10)

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.

602 Hastings street, West. Phone Seymour 2377.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.
(See page 16)

LUCKENBACH LINES

Empire Shipping Company, Ltd.

Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 21 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Galveston, New Orleans, and Mobile.
(See page 14)

MUNSON-McCORMICK LINE

Kingsley Navigation Company, Ltd.

602 Pacific Building. Phone Seymour 9506.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Baltimore, San Diego, Los Angeles, San Francisco and North Pacific Coast ports.
(See page 12)

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports, San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports.

NEW POST AT HONGKONG

E. W. Latie, formerly Kobe agent for the Admiral-Oriental and Dollar Lines, has accepted the position of manager of the Hongkong office of the Columbia-Pacific Shipping Company. The Hongkong office has jurisdiction over Columbia-Pacific affairs in all of South China.

ASSOCIATED OIL

The Associated Oil Company's fleet of tankers are being equipped with radio compasses as rapidly as possible. This new marine safety device has been adopted as standard equipment on these ships. Installations of this safety device on the tankers Frank G. Drum, Frank H. Buck and William F. Herrin of the Associated Oil Company fleet have already been completed. The Kolster radio compass is manufactured by the Federal Telegraph Company. T. E. Nivison was recently appointed manager of the marine sales department.

PANAMA-PACIFIC LINE

Starting with the departure of the Manchuria from New York on February 12, the Panama-Pacific Line will accept freight shipments from eastern points to San Diego, according to an announcement made recently by R. J. Ringwood, freight traffic manager of the Pacific Steamship Company, freight agents for the line. Since San Diego was made a port of call by the line last November, passengers only have been carried. Business interests in San Diego and adjacent territory have continually urged the officials of the line to carry freight to the Southern California port from the east coast. The advantages of an express freight service from New York to San Diego to the growth of the community has been advocated in such an emphatic manner that the Panama-Pacific Line in accordance with its policy to cooperate to the fullest extent with California business acceded to the demands.

RED STACK TUGS

Capt. J. T. Fletcher has been made assistant manager of the Los Angeles harbor office of the Red Stack Tug Company and the establishment of a branch at San Diego to care for increased activity at that port, are announcements received from Captain William McGillivray, head of the Los Angeles office. Captain Fletcher was formerly of San Francisco. Captain R. V. Walsh is in charge of the new Red Stack branch at San Diego.

NORTON, LILLY & COMPANY

GENERAL AGENTS, PACIFIC COAST

ISTHMIAN STEAMSHIP LINES (Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transshipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR (Pacific-Mediterranean Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

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NORTON, LILLY & COMPANY, Agents, Portland, Seattle, Los Angeles and San Diego

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SIGNALS FOR PILOT.
IN FOG - BLOW FOUR WHISTLES
WHEN CLEAR - BURN BLUE LIGHT OR JACK AT FORECAST.

ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.

(Operating U. S. S. B. vessels.)

112 Market street, Phone Sutter 7640.

FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

(See page 19)

CALIFORNIA ORIENT LINE

Pacific Mail Steamship Co., managing operators.

508 California street, Phone Sutter 3800.

(Operating U. S. S. B. vessels.)

PASSENGERS AND FREIGHT.

SAILINGS—Trans-Pacific Service.

Every 14 days from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—Hongkong-India (Freight Only.)

Connection at Hongkong every 2 weeks for India ports.

(See page 18)

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street, Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.

Robert Dollar Building, 311 California street.

Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Fortnightly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

(See page 10)

NETSUKE & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

(See page 14)

NETSUKE YUSEN KAISHA

Dodwell & Company, Ltd., agents.

2 Pine street, Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OSAKA SHOSHEN KAISHA

McCormick, McPherson & Lapham.

503 Market street, Phone Kearny 2632.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

549-51 Market street, Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service

and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

222 Robert Dollar Bldg. Phone Garfield 3899.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.

L. C. Smith Building, Phone Elliott 2068.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

(See page 18)

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Stuart Building, Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.

Central Building, Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

American Bank Building, Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

(See page 14)

NETSUKE YUSEN KAISHA

Colman Building, Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSHEN KAISHA

W. C. Dawson & Company, agents.

Mutual Life Building, Phone Elliott 0842.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building, Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building, Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building, Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

(See page 18)

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.

UNITED-AMERICAN

Theodore H. Jacobs, Pacific Coast passenger manager of the United American Lines, announces that V. O. Waldeck of the San Francisco office has been appointed traveling passenger agent for the territory south of Fresno and San Luis Obispo, Arizona and New Mexico, with headquarters in Los Angeles. William P. Montague has been named traveling passenger agent to cover Oregon, Washington, British Columbia, and Alaska, with office in Seattle. William M. Wildman and Albert G. B. Knuth have been transferred to the San Francisco Pacific Coast passenger headquarters.

BUILDER MOVES

K. H. Scheel, pioneer Seattle architect, has opened new offices at Room 20, Colman Dock, Seattle. Mr. Scheel designed and supervised the construction of many craft on the lists of Pacific Coast yacht clubs. In his new headquarters he will be associated with the Percy Wright Engineering Company.

M. S. PACIFIC COMMERCE

In line with the Furness policy of naming its motorships in Pacific Coast trade with the prefix "Pacific," the motorship Dominion Miller has been rechristened Pacific Commerce. The vessel, two years old, is of the same class as the newer motorships Pacific Trader and Pacific Shipper, except that it has no refrigeration.

FRENCH LINE

French Line sailings between Pacific Coast ports and Europe have greatly increased during the past few years. In 1922 a total of fourteen vessels cleared from the Pacific Coast to Europe; in 1923, fifteen vessels were dispatched, and in 1924 there were twenty-six sailings. Total cargo carried in 1924 was 200,000 tons. Sailings this year by the French Line vessels, for which the General Steamship Corporation are Pacific Coast agents, will continue on the 1924 basis, with probability of additional departures.

SEATTLE SAILINGS

Captain C. H. Morgan, master of the Matson liner Mauna Ala, recently resumed his command in the Hawaiian run after a lay-up on account of an automobile accident in San Francisco. In February the Mauna Ala will unite with the Matson vessels Makiki and Lurline in giving Seattle fortnightly sailings for the Hawaiian Islands.

United States Government Combination Freight and Passenger Services From Pacific Ports

American Oriental Mail Line

Trans Pacific Service from Seattle to
Yokohama, Kobe, Shanghai, Hong Kong, Manila.

A sailing every twelve days by one of the five great ships

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Fastest Service across the Pacific from the United States

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Two sailings a month

Also regular sailings direct to
Foochow, Amoy, Swatow, Cebu and Iloilo

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United States Shipping Board Fleet Corporation

ORIENTAL

412 Union Oil Bldg. Phone Broadway 7900
and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Fortnightly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

(See page 10)

OSAKA SHOSEN KAISHA

McCormick, McPherson & Lapham, agents.
Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

ROOSEVELT STEAMSHIP CO., Inc.

General Steamship Corporation, agents.

541 So. Spring street.

FREIGHT ONLY.

SAILINGS—At frequent intervals from San Francisco and Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

PORTLAND

AMERICAN ORIENTAL SERVICE

A. M. Gillespie, Inc., agent.

Board of Trade Bldg. Phone Broadway 4348.

SAILINGS—Monthly to ports of Japan and China as inducements offer.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

702 Wilcox Building. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

(See page 14)

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)

Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen. Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila.

(See page 19)

PORTLAND-ORIENT LINE

Wallem & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama,

Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

203-4 Wilcox Building. Phone Bdwy. 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MER-

CHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

A. T. HUBBARD SURVEYS S. F. TONNAGE

Proving conclusively that San Francisco now ranks second only to New York in American commerce, A. T. Hubbard, director of the Foreign Trade Bureau, San Francisco Chamber of Commerce, has just released figures showing that San Francisco Bay in 1923 handled over its docks \$2,018,400,925 worth of commodities. This statement is for the last year for which figures are available on all American ports. San Francisco's individual share of commerce totaled \$1,697,788,993, while the difference between the San Francisco and the San Francisco Bay totals is made up of commodities handled by Oakland, Richmond and other near-by shipping points. These official figures have been published by the United States Army Chief of Engineers of Washington, and show that 41 piers of San Francisco alone moved sufficient commodities to rank her second in American ports, surpassing Galveston, Philadelphia, Boston, Baltimore and New Orleans. All of which helps to drive home another fact why the Pacific Coast will eventually, and doubtless before long, be recognized as the most active territory in the maritime world.

GENERAL ELECTRIC PROMOTION

Henry W. Darling, 30 years treasurer of the General Electric Company, has resigned, and R. S. Murray, assistant treasurer of the company since 1910, has been appointed to the position. In accepting the resignation of Darling the board elected him a vice-president with such duties as shall be assigned to him by the president.

MARINE EXPERTS FORM NEW FIRM

James Barclay, naval architect and marine surveyor, and Albert W. Lawson, marine engineer and surveyor, both of San Francisco, announce the formation of partnerships. Both are experienced in every department of marine work.

MATSON LINE

In a recent announcement of ship sales received from the Emergency Fleet Corporation, Washington, is notice of the purchase by the Matson Navigation Company of the steel ocean-type coal-burner tug Moositauka, 429 gross tons, price \$46,000. The Old Time Molasses Company of Havana bought the concrete tanker San Pasqual, 7500 D. W. T., price \$16,000.

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.

Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

BLUE STAR LINE

The Robert Dollar Co., agents.

311 California St. Phone Garfield 4300.

REFRIGERATOR AND GENERAL CARGO.

SAILINGS—Every 21 days from Vancouver, Seattle, Portland, and San Francisco to Glasgow, Liverpool, Southampton and London.

(See page 10)

CANADIAN GOVERNMENT MER-

CHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp, Rotterdam.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

433 California street. Phone Sutter 6717.

PASSENGERS AND FREIGHT.

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M. S. AORANGI SPERRY-EQUIPPED

M. S. Aorangi, largest and fastest diesel ship in the world, which visited San Francisco in January 26, is equipped with a Sperry gyro-compass and gyro-pilot. She will operate between Vancouver and Australia in service of the Canadian-Australasian Royal Mail Line. The Aorangi carries 950 passengers; 380 first cabin and 284 second cabin. She is 600 feet long, 72 feet in beam, with a registered tonnage of 18,500, and displacement of 23,000 tons. Her speed is eighteen knots.

JENKINS BROS. NEW SALES HEAD

William H. Utz, vice-president and formerly European director of Jenkins Bros. Ltd., with headquarters in London, has been made director of sales of Jenkins Bros., valve manufacturers. Utz assumed the position on January 1st, with general charge of the selling activities of the entire organization.

GARLAND LINE SERVING CAMDEN, N. J.

Officials of the Garland Line announce the starting of sailings in the intercoastal service every two weeks from Camden, N. J., to Los Angeles, San Francisco, Oakland, Seattle, Portland and Grays Harbor. The steamer William Perkins was the first Garland vessel to sail from Camden. She was followed by the George Allen on February 6.

UNION OIL

The Union Oil Company of California has been awarded a United States Navy contract calling for 500,000 barrels of fuel oil for Pearl Harbor, Hawaiian Islands, and all of the diesel requirements for submarines at Puget Sound, San Pedro, San Diego, and Pearl Harbor. The contract covers the period from January 1, 1925, to June 30, 1925.

RETURNS FROM PACIFIC NORTHWEST

Zac T. George, Pacific Coast manager of the Luckenbach Steamship Company, recently returned to the San Francisco offices following a tour of the Pacific Northwest. Mr. George reported that business houses are showing keen optimism in the outlook for 1925. He believes that the construction programs throughout the Pacific Coast territory will improve conditions and help make 1925 a prosperous period.



HAWAII

The Year-'Round Playground

"A tiny group of South Sea islands—so think the careless and unread of Hawaii," writes Harold H. Yost in the *San Francisco News Letter*. "As a matter of fact, the Hawaiian group lies some hundreds of miles north of the real South Sea Islands. . . . A splendid arrangement, that! Warmth, but not too much warmth; cooling breezes, but no cold winds. No storms of tropical violence; no snow, sleet or fog. Gentleness, tranquility; a peaceful and generous Nature making for a spirit of peace among men. . . ."

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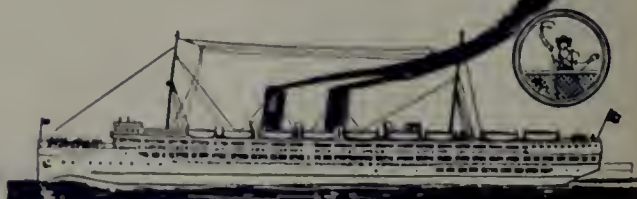
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Pacific Marine Review

The National Magazine of Shipping

MARCH, 1925

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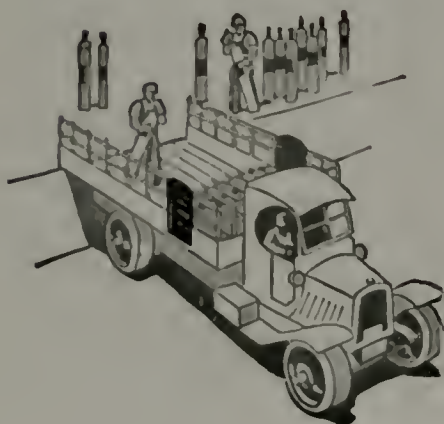
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of the PACIFIC AMERICAN*

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of the SHIPOWNERS' ASSOCIATION
of the PACIFIC COAST*

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Whenever the Linde Company in its field work finds a considerable group of its users struggling to solve the same welding or cutting problem, it plans to publish a book on the subject. These books enable you to help yourself and make it possible for every Linde man to give assistance.

2. Magazines

Two monthly magazines are published by the Linde Company. Both have the same aim: to keep Linde customers informed on the latest methods and to let them know how others are using the oxy-acetylene process to save time and money. "Oxy-Acetylene Tips" is edited for large users and "The Linde Oxwelder" is written to help smaller shops.

3. Service Operators

Perhaps you cannot find the help you need in the Linde books and magazines. A trained service operator may be needed to help locate the cause of trouble or demonstrate the proper methods. Service Operators are a part of Linde Process Service.

4. Service Supervisors

Your problem may be unique or very stubborn, demanding more experience

or knowledge than the service operator can offer. Linde has men with these qualifications who are ready to serve you. They are called Service Supervisors.

5. Service Engineers

The solution of some problems requires more than a wide knowledge of process applications and an ability to use the blowpipe, because they involve some special engineering. That is why a group of Service Engineers are on the Linde staff, backing up the service men.

6. Consulting Engineers

Occasionally the economical and efficient use of the oxy-acetylene process requires that it be coordinated with other processes. This may require the highest type of engineering talent. When you need this kind of service the Linde Consulting Engineers are available.

7. Research Laboratories

Welding and cutting are primarily metallurgical problems. And that means that new methods and new processes must be tested by laboratory methods and be backed with engineering data. In this the Linde Company and you are served by the Union Carbide & Carbon Research Laboratories, Inc.

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THE PIO BENITO

Prior to the middle or late '70's, the trade between San Francisco and Central America was entirely carried on in schooners, brigs, and barks ranging from 80 to about 350 tons. Many were of clipper model and made fast passages, 35 days from Punta Arenas being not uncommon. In 1875 the firm of C. Adolphe Low & Company had the Pio Benito built by Hall Brothers, Puget Sound, specially for the Costa Rica coffee trade from designs of Captain Perriman, who embodied in them the experience of many years of sailing in the Pacific Ocean and China Seas. She was 137 by 31 by 11:4, and on her register of 277 tons, was expected to carry 500 tons of coffee under deck, on a draft of 12½ feet. The foremast was 24 inches in diameter at the partners; the mainmast, 21½; and the mizzen, 20½; the foreyard was 65 feet long. She was expected to prove a fast sailer, but unfortunately her career was very short, she being lost on the Central American coast in August, 1875.

Our picture is from a water color by the famous marine artist, Coulter, and shows a type of rig now practically unknown in the Pacific Ocean.



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Pacific Marine Review

The National Magazine of Shipping

Official Organ
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Bernard N. De Rochie,
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Official Organ
Shipowners' Association
of the Pacific

Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager.

A Maritime Conference

PRESIDENT ALFRED GILBERT SMITH of the American Steamship Owners Association has announced that in the near future he will call a general conference of the members of the American Steamship Owners Association and of the Pacific American Steamship Owners Association to "evolve a workable plan by which the retirement of the United States government from ship operation can be accomplished at an early date."

This plan must not only be conceived, but it must be worked out in all of its details and backed by facts and reasons to withstand the assaults which its critics and the advocates of government operation will direct at it, before the convening of the next regular session of Congress, or by the time a special session is called, if one is convened by the President.

The problem is a large one. Any plan proposed by shipowners should receive respectful and careful attention from politicians on the Shipping Board and statesmen in Congress. It is perhaps asking too much from a politician that he consent to lose his job and from a statesman that he agree to lose "face." Nevertheless it is true as President Smith points out that:

"One can safely prophesy that private ownership and operation can be accomplished at a cost of many millions of dollars less than the government is now spending on operations that are leading nowhere, so far as permanence of American ships in foreign trade is concerned"—and no salve is so potent for lost dignity as salved income.

There are many indications in the last elections which point to a reasonable faith that America is ready and willing to back any sensible plan based on experience and facts that promises to put the merchant marine on a private ownership basis. There is undoubtedly a proper solution for this problem. If the American Steamship Owners Association cannot find that solution then they have "no right to criticise the government for staying in the business." We believe that the association will find a way out and that the government will see the light.

Make Philippines Coastwise

AMERICAN ships, private and government, are already carrying over 50 per cent of the commerce between the Philippine Islands and the United States, and since more ships are available for that service if needed, there would seem to be no reason for longer delay of a Presidential proclamation declaring the extension of the United States coastwise laws to those islands.

In practically every other particular the Philippine Islands are treated as a portion of the United States. Philippine products come in free of duty, as do our products enter Manila. Commercially the Philippines are practically American territory.

The coastwise law has been in effect in Hawaii for over twenty-five years, and has been of great benefit in building up American business in those islands. It will do the same for the Philippine group.

No international complications need be feared, as this reservation (in some form or other) of colonial trades is an almost universal practice among other nationals.

The provisions of the Merchant Marine Act of 1920, Section 21, are almost mandatory under present conditions, and the President should act without delay.

The Golden State

MANY indications point to the fact that the attention of the shipping world is becoming fixed on the Pacific Coast of North America as the most profitable theatre for mercantile ventures.

Pacific Marine Review has often pointed out, in editorials and feature articles, that the growth of the whole Pacific Coast in population, agriculture, industries, and marine trade is unrivaled anywhere else in the world. We have tried our best to discourage sectional rivalry on the Coast and to build up a spirit, especially among the marine fraternity, for a constructive program of publicity, working toward growth of all ports and all sections.

We wish now to call the attention of the Ports of California to a fact, which, so far as we have been able to find out, is almost unknown to the boosters of either the city by the Golden Gate or the great metropolis of our Southern Coast. California during the last two years has come into second place among the states of the Union in the total tonnage of waterborne commerce entering and leaving her ports. The Golden State is now second only to New York, and just as New York is in a class by itself as No. 1, so California is away out in a special class as No. 2, her tonnage being more than double that of her nearest rival. Particularly gratifying in viewing this phenomenon of California growth is the fact that her growth is just beginning, whereas that of New York is at a standstill, if not slightly on the decline.

Let us therefore forget all of our sectional rivalries in the matter of harbor statistics and get together to put California where she belongs as the greatest producer and the greatest consumer of waterborne freight.

Bargain Sales

LOOKING around over the marine world during the opening months of 1925, the first impression on a casual observer must be the great number of apparently new and good cargo vessels that are for sale at bargain prices.

The United States Shipping Board is the great depository for these bargains and the prices asked seem to be approaching the point where the ship is practically a gift. For instance, we have the recently published sale of four Lake-type freighters for \$100,000, a price which gives deadweight tonnage capacity at a little above \$6 per ton. This price carried with it the condition that these boats be converted to diesel power immediately at a cost of approximately \$60,000 per vessel. Assuming that this dieselization is practicable at the \$60,000 price, the new owners will have seagoing motorships at a cost of \$23 per deadweight ton capacity.

We note that the Shipping Board, in a more recent announcement, is undertaking a campaign to stimulate the sale of all its Lake-type vessels. There are 325 of these still in the hands of the Board. Sixty-four are coal burning, single deck vessels, fitted with Scotch boilers and triple expansion engine, averaging around 3000 deadweight tons on 18-foot draft. Eighty-six of the same type are of 3500 deadweight tons capacity on 21-foot draft. One hundred sixty-two average 4200 deadweight tons each, and an arrangement for tween decks. One hundred ten of this 162 are fitted with oil burning boilers.

The board has fixed a basic price of \$50,000 each on these ships and will sell them to responsible American buyers for that sum, less the amount estimated to be necessary for reconditioning them for sea service. It would seem that here is an opportunity for American coastwise operators to purchase well-built deep-waisted, sea-worthy hulls at a very small fraction of their actual value.

These ship bargains, however, are in many ways increasing the already heavy burden of those American ship operators who built their own ships without government aid or bought from the Shipping Board at former high prices. Such owners now find themselves in competition with ships which have been picked up for little or nothing, and whose operators are willing in many cases to cut rates and go after business along non-conference lines. Since there is not enough waterborne freight moving to keep the present active fleet busy, every new bottom that gets business cuts down the average loading and makes reasonable profit a more remote contingency.

National Foreign Trade Convention

SEATTLE and the Pacific Coast cities join in inviting business men of the nation to attend the Twelfth Annual Convention of the National Foreign Trade Council in Seattle, June 24, 25 and 26, 1925. It will attract to Seattle several thousand of the leading financial, industrial, shipping, export and

import, and commercial men of the United States, and groups prominent in those activities in other countries. James A. Farrell, president of the United States Steel Corporation, who will preside over the convention, is urging the business leaders of the country to attend this great gathering.

Special round trip summer excursion rates will be in effect. These round trip fares from Chicago west are only one-tenth more than the regular one way fare, and a relatively large saving is also made on tickets purchased east of Chicago and south of Chicago. The national parks of the West—Yellowstone, Glacier, Estes, Rainier, Yosemite, and Crater Lake—will all be open at that time so that delegates can visit any or all of them either coming to or going back from the convention.

A special appeal is being made to business men of the East to time their western visits so that they can attend the convention. The low fare excursion tickets provide liberal stopover privileges in all cities enroute or return. Those interested in programs, suggested itineraries for western trips and in matters relating to the convention, are invited to write to the Foreign Trade Department of the Seattle Chamber of Commerce, Seattle, Washington.

The slogan of the convention is "Seattle—the Meeting Place of the Orient and the Occident." It is fitting that the convention is to be held in Seattle, the nearest American port to Asia, for the gathering there of these thousands of leaders will center interest upon trade with the Orient. The convention will afford business men of America and foreign visitors an unusual opportunity to make desirable business contacts, to catch the spirit and methods of American business men and to enjoy the increased trade which always follows the establishing of personal relationships.

CONTRACT TO BUILD A BRIGANTINE. On Jan. 20, 1752, Samuel Pitts of Tingmouth, country Devon, England, covenanted with Clement Dearing of Kittery, to build a brigantine of "Forty Four Feet Keel, Nineteen Feet Beam, Eight Feet Hold, Three Feet & Ten inches between Decks, to have a Full proportion of Rake forward & aft, to have a Rise forward for a Fore Castle with a Beam grubbed down to a proper Depth, another Beam grubbed down to lay the Quarter Deck on, to have a close Gunel fore & aft, to have eight Inches waste, all proper Wales as ever put in such a vessel, to have a Strake of Plank work'd all round the vessel of Three inch both within side & out above the wales & another on the Prong heads of the same thickness . . . all the Plank to be good sound Oak except the Decks which are to be good sound White Pine full two inches thick, to have no Butts in the Upper Deck, her Water Ways to be White Oak well grubbed down to build ahead, to put up handsome & strong Stanchants for Six Gun Ports on the Quarter Deck & handsomely to put up all rails brestwork, to find & make all Masts Yards Bowsprit caps Ensign, Pack[sic] & Pendant Staffs . . . with all Lumb'r & Ballast Ports, the Vessel to have a long floor to carry her Breadth well forward, the Tree Nails to be Drove in Tar, to Stock two or three anchors, to drive Three Threads of Oacum, in every Seam, to Caulk recaulk & Grave her & to do all Carpenters work even to a Cleat." Pitts was to supply all Ironwork, pitch, tar, Oakum and joiners work and to pay £312.5.0—1/3 at the signing of the contract, 1/3 when the lower deck was laid, and 1/3 when the vessel was launched which was to be done on or before May 10, 1752.—*Notarial Records owned by Charles H. Taylor, Jr.*

YOUNG AMERICA

A Concise History of the Famous
Yankee Clipper

By F. C. MATTHEWS

(Continued from February issue)



THE passage of the Young America from New York to San Francisco in 1870 was 139 days, her second longest over the course. Taking her departure August 22 she was 38 days to the line; on October 2, about 5 a. m., she struck a reef off Cape St. Roque; jettisoned some cargo and came off some 4 hours later, not leaking nor having sustained any serious damage; crossed 50 south, Atlantic, 70 days out and was thence 20 days to a similar latitude in the Pacific; off Cape Horn had a fearful hurricane lasting 6 hours; was 24 days running up the South Pacific, crossing the line 114 days out and being 25 days thence to destination; was within 400 miles of the Golden Gate for 10 days. Arrived January 8, 1871.

She sailed April 7, and arrived at New York July 2, a passage of 86 days, the second best for a loaded ship. Sailed from New York September 1, 1871, and had the long passage, for her, of 131 days to San Francisco, arriving January 10, 1872. Was 34 days to the line in fine weather; thence 29 days to 50 south; was 22 days from 50 to 50, of which 18 were spent in furious gales from northwest to west. Was in the Pacific 85 days out and had fine weather to destination; was 24 days in the South Pacific and 22 days from the equator, the last 7 of which were spent in making the final 750 miles. Completing this voyage she was 105 days to Liverpool.

Liverpool-San Francisco Record

On her following passage the Young America made a record which holds good to the present time, not only as a whole run but also as to a number of the sections thereof. She left the Mersey October 12, 1872, and discharged the Channel pilot off Coningbeg light ship, near Tuskar, on the 16th; the next day she made 340 miles; then 268, 230, and 300, a total for the 4 days of 1138 miles; on the following 7 days her runs were 207, 212, 255, 260, 227, 225, and 223, a total of 1609, or 2747 miles for the 11 days. She was 15 days 6 hours from pilot to the equator, and 2 days 13 hours later passed Pernambuco; average thus far, 225 miles per day. Was 43 days 12 hours from pilot to Cape Horn, and on the 51st day was in 50 south, Pacific. From 30 south to 20 south was 7 days, as follows: 155, 103, 70, 33, 71, 120, and 175 miles, which spoiled a most excellent passage. Crossed the equator January 3, 1873, and on the 18th was 100 miles southwest of the Golden Gate, 94 days from pilot, but the wind then came out north-northeast and she had to tack and stand off shore; anchored in San Francisco Bay January 20, 99 days from Liverpool, 96 days from

pilot. This passage and the run of the British ship Merioneth, 97 days from Cardiff, 96 days from Lundy Island, in 1888, are the only ones ever made by sailing ship from any European port to San Francisco via Cape Horn in less than 100 days.

The British ship La Escocesa (The Scotch Lady), now the Star of Chile of the Alaska Packer's fleet, a fine iron ship built at Dundee in 1868 and credited with being quite a fast sailer, had left Liverpool October 7, five days ahead of the Young America. Unlike the latter, however, she had a good run down the Channel and favorable weather in the south Pacific, so that the two had the same length of passage to the Pacific equator. Thereafter the American had the advantage, arriving at San Francisco 11 days in the lead, thus beating La Escocesa a full 16 days. In spite of this fact Captain Evans of the La Escocesa and many of his friends believed that his ship was the faster of the two.

The two vessels sailed from San Francisco in company on February 27, a large amount of money being staked on their passages. The Young America arrived at Liverpool on June 14, 107 days out, while La Escocesa did not reach Queenstown until June 27, 120 days' run. It was estimated that fully \$20,000 changed hands in San Francisco and an equal amount in England when the outcome was announced. It is strange, in the face of these dates and figures, the correctness of which cannot be questioned, that there has appeared frequently in public print, in the past and recently, statements to the effect that the British ship was victor in both the outward and homeward "races."

Captain John L. Manson

At Liverpool Captain Cumming left the Young America, to take charge of the big ship Three Brothers, then being outfitted at San Francisco. He was succeeded by John L. Manson, formerly captain of the ship Valparaiso. All three ships belonged to George Howes & Co. of New York and San Francisco.

The Young America left Liverpool July 16 and made the run to New York in 23 days. She sailed from that port October 29, 1873, and was 25 days to the line; 50 days to 50 south; was 16 days making the Cape Horn passage in light winds and fine weather; came up the South Pacific in 21 days, crossing the equator 87 days out; thence 20 days to San Francisco, arriving February 13, 1874, 107 days' passage. She sailed from San Francisco March 12; was 17 days to the equator

and passed Cape Horn 41 days, 10 hours out; was in 38:28 south, 39:16 west on the 49th day; thereafter had light or contrary winds practically all the way to Cape Clear, which was passed on the 98th day out. Arrived at Liverpool June 23, 103 days' passage, being 102 days, 12 hours from bar to bar.

On one day, in the Irish Channel, the Young America passed twenty ships bound the same way. The following day nineteen were in sight, all close-hauled on the starboard tack; but only one, a large skysail ship, proved anything like a match for the Young America, the two sailing nearly side by side for 36 hours. The race started with skysails set and ended when topgallants had to be furled and the stranger tacked. On this passage the Young America covered 16,317 miles, an average of 158½ per day, and beat the Glory of the Seas 14 days.

6435 Miles a Month

After loading for San Francisco she left Liverpool August 30 and was 4 days to Tuskar light in heavy gales and generally bad weather; crossed the line 30 days out and was 25 days thence to 50 south; 15 days later was in 50 south, Pacific, from whence she was 25 days to the equator, 95 days out; thence 22 days to destination, arriving December 25, 117 days' passage. Sailed February 9, 1875, and made the Sandy Hook light ship at 7 a. m. May 12, passage 91 days, 12 hours. During the first three days from the Golden Gate she made but 236 miles, yet was on the equator 15 days, 22 hours out, and was off the pitch of the Cape in 41 days, 1 hour. Crossing 50 south, Atlantic, 44 days out, the vessel had a strong northwest gale with a very heavy sea, water flying over everything under lower yards and the ship under courses and single reefed topsails, going over 11 knots. At 10 a. m. she made a sail on the lee bow and at 11 o'clock was up with her, the City Camp, 77 days out from Portland, Oregon, for Europe. She was going 5 to 6 knots under lower topsails and at noon was out of sight astern. When 49 days out the Young America was in 39:23 south, 34:24 west, very close to the position she was in the same time out on the previous passage, although this time she was drawing one foot more than usual. During the whole month of March the Young America sailed 6435 miles, an average of 207½, one week making 1802, an average of 257½, with 270 as the best day. On April 25 she was 7 miles north of the equator and took the trades; on May 2 was in 19:26 north, 59:48 west, making in the 7 days the following distances: 222, 260, 246, 236, 250, 216 and 237 miles, a total of 1667 and an average of 238 1/7. She was 16 days, 20 hours from the line to the light ship and 4½ hours later passed Sandy Hook, 91 days, 16½ hours from San Francisco.

Captain E. C. Baker

Sailed from New York July 9, 1875; was 32 days to the line; 56 days to 50 south; 13 days from 50 to 50; 19 days from 50 south, Pacific, to the equator, which was crossed on the 88th day out; thence 24 days to San Francisco, arriving October 29, 112 days' passage. Sailed December 21 and was 97 days on the return passage to New York. Here Captain E. C. Baker, formerly in command of the Black Hawk, belonging to the same owners, took the Young America; sailed from New York May 16, 1876, and had fine weather to the line, 32 days out; then had head winds practically all the way to 50 south, which was crossed July 17, 30 days from the line. Then, having a succession of strong easterly gales, she made the Cape Horn passage

in record breaking time, crossing 50 south in the Pacific July 23. This run of 6 days has never been beaten and possibly never equaled. Throughout the whole run up the Pacific light and variable winds were encountered, the Young America being 26 days from 50 south to the equator and 31 days thence to San Francisco. In latitude 33 north she made but 20 miles per day for 7 days. Arrived at destination September 18, 125 days from New York. Loaded back for that port; left San Francisco October 20 and made the run in 99 days.

Sailed from New York March 22, 1877, and arrived at San Francisco August 5, a passage of 136 days; had adverse weather throughout, excepting the 10 days between the two 50's. The first 13 days out from New York she met with violent easterly gales and made no progress to speak of; was 33 days to the line; 67 days to 50 south; 77 days to 50, Pacific; 106 days to the equator and 27 days thence to destination. Sailed from San Francisco September 12 and made the passage to New York in 92 days. Left that port February 6, 1878; was 21 days to the line; had strong trades and was in latitude 33 south when 33 days out; thereafter, however, had very heavy head gales for 37 days, to 50 south, Pacific, which was crossed on the 70th day; was thence 24 days to the equator and 23 days from there to San Francisco. Arrived June 3, 117 days' passage. Returned to New York, sailing July 20, and making the run in 101 days. Left that port January 20, 1879, and had fine weather to the line, 21 days out; was in latitude 35 south on the 35th day; then had a repetition of the experience of the previous voyage, being 35 days in heavy head gales to 50 south, Pacific; from 50 to 50 occupied 26 days; from 50 south, Pacific, to the equator, had the very fast run of 18 days and was 24 days from the line to San Francisco. Arrived May 16, passage 116 days. Returned to New York, sailing June 8 and making the run in 114 days, which is her longest homeward passage.

Sailed from New York December 26, 1879, and arrived at San Francisco April 7, 1880, 102 days from pilot to pilot, 102 days, 12 hours, port to port; this is her fastest westward passage from New York. After getting past Sandy Hook she had strong westerly winds off the coast, followed by strong northeast trades, so that she was on the line 19 days out; had good to strong southeast trades and was in latitude 50 south, 22 days from the line and 41 days out; was 16 days from 50 to 50, being becalmed 5 days off Cape St. John and then having the usual violent weather until reaching the Pacific; ran up the South Pacific in 22 days, crossing the line March 14, 79 days out; had trades from the line to 30 north, 134 west, after which had northwest and westerly winds to port, 24 days from the line.

Captain H. T. Baker

At San Francisco Captain E. C. Baker was succeeded by his brother, H. T. Baker, and the Young America sailed May 20 for Liverpool, making the passage in 106 days, thus beating the Glory of the Seas 14 days, and other ships sailing of about the same time, from 30 to 50 days.

Sailed from Liverpool October 11, 1880, and arrived at San Francisco January 30, 1881, a passage of 111 days. She had a fine run down the Channel after which met with light southerly winds and calms and found no trades so that she was not up with the equator until the 34th day out; had 25 days thence to 50 south; passed to the eastward of Staten Island and

was 12 days from 50 to 50; had light trades in the South Pacific which held to 4 north; crossed the equator 95 days out; from latitude 4 to 11 had baffling winds; then had strong northeast trades to 27 north, 130 west, after which the winds were from the southeast; was inside the Farallons on January 28, 14 days from the line, a run which is believed never to have been beaten; then had very boisterous weather with dense fogs and was obliged to stand offshore, not being able to enter port until 2 days later; for the last 60 hours of the passage had been with 84 miles of the Golden Gate.

The *Young America* then loaded 1893 short tons of wheat and sailed for Antwerp on March 9, 1881; made the passage in 118 days. Left Antwerp September 6, 1881, and was 4 days clearing the land; had southerly winds until the trades were picked up, but they proved very light; crossed the line 31 days out; had head winds to 25 south and then head gales to 50 south, which parallel was crossed on the 61st day; had strong head winds for 17 days from 50 to 50; in the South Pacific very light and variable winds prolonged her run to the equator to 36 days; her time to the line was 114 days and thence to San Francisco 29 days, with head winds throughout. This passage, 143 days, is the slowest made by the *Young America* to San Francisco, as well as the last Cape Horn run she made to that port. She arrived January 27, 1882, and sailed for New York March 22, making the latter run in 102 days.

Captain Charles Matthews

On her last voyage as an American ship, she left New York September 7, 1882, and arrived at Portland, Oregon, February 5, 1883, 151 days' passage; her experiences on this run were practically a repetition of those on her last voyage to San Francisco, generally adverse winds throughout. From Portland she was 7 days to San Francisco with a part cargo of wheat. Left San Francisco for the last time June 2, 1883; put into Rio leaking when about 62 days out; repairs occupied some 20 days and she arrived at New York October 6, about 100 sailing days from San Francisco.

Captain Charles Matthews, well known on the Pacific Coast as master of the ships *Shirley* and *Canada*, had succeeded Captain Baker at San Francisco, on this, the last trip on which the world renowned clipper flew the Stars and Stripes. A short time after her arrival at New York she was sold for \$13,500 and went under the Austrian flag as the *Miroslav*, hailing port Buccari. After operating in the trans-Atlantic trade some two years she was reported as missing, never being heard from after leaving the Delaware Breakwater on February 17, 1886, for Fiume.

The *Young America* was built to the order of George B. Daniels of New York. About 1860 her registered owners were given as Abram Bell's Sons, they being succeeded in the ownership a few years later by Robert L. Taylor, also of New York. From about 1870 until 1880 she belonged to George Howes & Co., and on their retiring from business she became the property of John Rosenfeld of San Francisco, their successor. The names of her different masters have heretofore been given.

1423 Miles in 4 Days

While the Cape Horn route does not offer the same opportunities for great daily runs for protracted periods such as occur in the South Atlantic and Indian Oceans in Australian passages, yet the *Young America* has some noteworthy performances to her credit. Aside from those previously mentioned, there is her four

consecutive days' work on her 99-day passage from San Francisco to New York in 1876: 365, 358, 360 and 340 miles. This is believed to be her best showing. It is noted that, although her fastest run from New York to San Francisco is 102½ days, a total of her best performances over the different sections on several passages aggregates but 79 days, as follows: New York to the line, 19 days; line to 50 south, 22 days; 50 to 50, 6 days; 50 to equator, 18 days; equator to inside the Farallon Islands, 14 days. In 1853 her time from the equator in the Atlantic to the equator in the Pacific was 52½ days; in 1869 it was 54 days; in 1856 and in 1873, 56 days. From the equator in the Atlantic to San Francisco, she was 74 days in 1853; 77 days in 1881; 80 days in 1873; 81 days in 1869 and also in 1872; 83 days in 1876 and also in 1880. In 1870 she ran from the equator in the Pacific to the equator in the Atlantic in 48 days. As to the time she made on round voyages, the following are worthy of special mention, although there are a number of others only a few days longer. From San Francisco to New York and return, August, 1867, to April, 1868, gross, 8 months, 15 days; actual sailing days, 208; from San Francisco to Liverpool and return, May, 1880, to January, 1881, gross 8 months, 10 days; actual sailing days, 217; from Liverpool to San Francisco, thence to Liverpool, thence to New York, October, 1872, to August, 1873, gross, 9 months, 27 days; actual sailing days, 228; from New York to San Francisco and return, January to September, 1868, gross, 8 months even, 218 sailing days; from New York to San Francisco, thence to Liverpool, October, 1873, to June, 1874, gross, 7 months, 24 days; 209 sailing days. In 1874 and also in 1875 she passed Pitcairn's Island on the 24th day from San Francisco. The average length of her 20 passages from New York to San Francisco is 118 days, considering her time in 1859 as the actual number of days she was at sea. The average of her 13 return runs to New York is 98 2/13 days, and of her 6 passages from San Francisco, 109 days.

It will be seen that, considering her long life, the *Young America* had but few mishaps, particularly those incident to the passage around Cape Horn, where on only two occasions did she receive damage, the most serious being the breaking of her jibboom. Neither of her dismasting experiences entailed near the expense incident to her springing a leak in 1866, when the cost of repairing and overhauling on the Mare Island dry dock amounted to about \$40,000. She also received a thorough overhauling in 1872 and again in 1879, and while in American hands was always kept in the best of condition, although in her later years she was, of course, pretty well worn.

ABOUT TRADE LISTS

THE Department of Commerce, Washington, D. C., reports that trade lists are now available showing foreign concerns which are important importers and dealers in practically all commodities exported or that might be exported from this country. All foreign trade centers, large and small, are covered in these listings.

The lists are compiled from material received from the foreign representatives of the United States Departments of State and Commerce, a combined force of about 1000 men. Only those dealers who, in the opinion of the investigators, might be worth while distributors for American exporters are listed.

COASTAL NAVIGATION

By EMORY B. BRONTE

Assistant to Operating Manager, McCormick Steamship Company

WHEN approaching the land from seaward the course from the last position by observation to the point to be made should be laid off upon the largest scale chart available which embraces the locality and the chart carefully studied to assure a clearance of all dangers. A chart of this kind should give in detail the depths of water, nature of bottom, lights, beacons, ranges and all objects by which the place can be recognized. The notes on the chart should be carefully read and heeded, the characteristics and visibility of the lights should be looked up in the light list, together with their fog signals, so as to be readily recognized and all information given in the government pilot book for the vicinity carefully studied. If the chart to be used is from an old survey much caution should be exercised unless it has been corrected to a recent date. Large blank spaces where no depths of water are shown are to be regarded with suspicion as probably no soundings were made over these spots and unknown dangers possibly existing therein.

The sounding machine and faithful hand lead, known to seamen as the "blue pigeon," must be ready for immediate use. If the weather thickens frequent sounding should be taken, with the sounding machine if there is much way upon the ship and with the hand lead if the ship is slowed and the water very shoal. The importance of the sounding machine in coastal navigation is very great and the necessity of its frequent use, when making land in foggy weather or when in the vicinity of dangers, cannot be too strongly emphasized. When proceeding along a coast in thick fog, soundings should be taken at regular intervals, and the patent log read at the time of each, if the position of the ship is to be known with any degree of certainty. Soundings taken at random will seldom give the ships' position and on the contrary would very probably be misleading in many instances. The best method of determining the ship's position by a chain of soundings is to lay off the course on a square piece of tracing paper and mark on the distances, according to

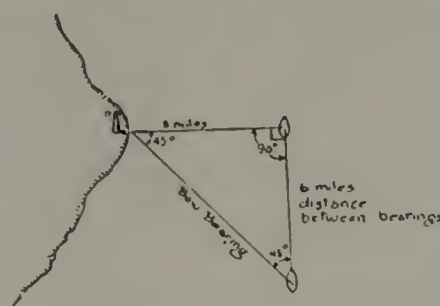


Diagram showing method of 45-degree angle determination of distance offshore

the scale of the chart, made in the intervals between the soundings. Abreast each mark set down the time, depth of water obtained, nature of the bottom and the reading of the log. Then slide the paper over the chart parallel to the course and on each side of it until the soundings on the chart and on the paper come to an agreement. The position of the ship is then closely determined and in any case danger can be avoided by following the indications of the soundings. Due regard should be had for a possible inaccuracy in the soundings because of the speed of the ship. The amount of this inaccuracy can be determined by comparing soundings taken at sea with ones taken while the

ship is at anchor, the depth of water having been correctly measured by an accurately marked lead line.

Coming within sight of terrestrial objects whose positions are shown on the chart, the position may be fixed by various means.

When sighting a light, a good practical method for ascertaining the approximate distance the ship will pass it when abeam, provided the same course is kept, is to immediately observe its bearing. Then enter table 2 with its true bearing on the bow as a course and its range of visibility in the distance column abreast of which in the departure column will be found the distance. This should not be strictly relied upon, however, but as the light is approached the time that it bears at an angle of 45 degrees on the bow, or on the four points, should be noted, together with the patent log reading, and the same done when it bears abeam or 90 degrees on the bow. The distance made by the ship in the interval between the bearings is her distance from the light when abeam. This constitutes the well known four point or bow and beam bearing, which may be solved, by using the speed table, with no figuring whatever being necessary, provided the

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	431.8	432.3	432.8	433.3	433.8	434.3	434.8	435.3	435.8	436.3	436.8	437.3	437.8	438.3	438.8	439.3	439.8	440.3	440.8	441.3	441.8	442.3	442.8	443.3	443.8	444.3	444.8	445.3	445.8	446.3	446.8	447.3	447.8	448.3	448.8	449.3	449.8	450.3	450.8	451.3	451.8	452.3	452.8	453.3	453.8	454.3	454.8	455.3	455.8	456.3	456.8	457.3	457.8	458.3	458.8	459.3	459.8	460.3	460.8	461.3	461.8	462.3	462.8	463.3	463.8	464.3	464.8	465.3	465.8	466.3	466.8	467.3	467.8	468.3	468.8	469.3	469.8	470.3	470.8	471.3	471.8	472.3	472.8	473.3	473.8	474.3	474.8	475.3	475.8	476.3	476.8	477.3	477.8	478.3	478.8	479.3	479.8	480.3	480.8	481.3	481.8	482.3	482.8	483.3	483.8	484.3	484.8	485.3	485.8	486.3	486.8	487.3	487.8	488.3	488.8	489.3	489.8	490.3	490.8	491.3	491.8	492.3	492.8	493.3	493.8	494.3	494.8	495.3	495.8	496.3	496.8	497.3	497.8	498.3	498.8	499.3	499.8	500.3	500.8	501.3	501.8	502.3	502.8	503.3	503.8	504.3	504.8	505.3	505.8	506.3	506.8	507.3	507.8	508.3	508.8	509.3	509.8	510.3	510.8	511.3	511.8	512.3	512.8	513.3	513.8	514.3	514.8	515.3	515.8	516.3	516.8	517.3	517.8	518.3	518.8	519.3	519.8	520.3	520.8	521.3	521.8	522.3	522.8	523.3	523.8	524.3	524.8	525.3	525.8	526.3	526.8	527.3	527.8	528.3	528.8	529.3	529.8	530.3	530.8	531.3	531.8	532.3	532.8	533.3	533.8	534.3	534.8	535.3	535.8	536.3	536.8	537.3	537.8	538.3	538.8	539.3	539.8	540.3	540.8	541.3	541.8	542.3	542.8	543.3	543.8	544.3	544.8	545.3	545.8	546.3	546.8	547.3	547.8	548.3	548.8	549.3	549.8	550.3	550.8	551.3	551.8	552.3	552.8	553.3	553.8	554.3	554.8	555.3	555.8	556.3	556.8	557.3	557.8	558.3	558.8	559.3	559.8	560.3	560.8	561.3	561.8	562.3	562.8	563.3	563.8	564.3	564.8	565.3	565.8	566.3	566.8	567.3	567.8	568.3	568.8	569.3	569.8	570.3	570.8	571.3	571.8	572.3	572.8	573.3	573.8	574.3	574.8	575.3	575.8	576.3	576.8	577.3	577.8	578.3	578.8	579.3	579.8	580.3	580.8	581.3	581.8	582.3	582.8	583.3	583.8	584.3	584.8	585.3	585.8	586.3	586.8	587.3	587.8	588.3	588.8	589.3	589.8	590.3	590.8	591.3	591.8	592.3	592.8	593.3	593.8	594.3	594.8	595.3	595.8	596.3	596.8	597.3	597.8	598.3	598.8	599.3	599.8	600.3	600.8	601.3	601.8	602.3	602.8	603.3	603.8	604.3	604.8	605.3	605.8	606.3	606.8	607.3	607.8	608.3	608.8	609.3	609.8	610.3	610.8	611.3	611.8	612.3	612.8	613.3	613.8	614.3

Table showing approximate distance in nautical miles for any given number of minutes when the speed in knots per hour is known

speed of the ship is known. Simply look in the column under the knots per hour the ship is making, abreast the number of minutes in the time interval, and the distance off will be found directly.

It frequently happens, though, that a light or other known object is obscured when on the four points or is not sighted until nearly abeam. In such cases tables 5A and 5B are employed to good advantage as follows: A careful bearing of the object is taken, the time noted and log read. After running a sufficient distance another bearing is observed and the reading of the log at the time again noted. Then entering the tables, 5A if the bearings are in points, 5B if degrees, with the difference between the course and the first bearing at the top of the page and the difference between the course and the second bearing at the side, in the first column of either table is found the distance from the object at time of second bearing and in the second column the distance when abeam if the distance made between the bearings is one mile. If the distance made in the interval should be other than one mile, the number taken from the table must be used as its multiplier in order to obtain the required distance. For example, a ship is steering east true and a light is observed bearing NExN true. She then runs three miles on the same course and a second bearing is observed to be NxE. The difference between the course and first bearing is five points and the second bearing seven points. Entering table 5A, in the first column under 5 and abreast 7 is found 2.17×3 (distance run) = 6.51 miles distance from the light at second bearing. In the second column is found $2.13 \times 3 = 6.39$ miles, which is distance the ship will be from the light when it comes abeam.

When two terrestrial objects whose bearings differ closely to 90 degrees are in view the position should be fixed by cross bearings, a bearing of each being taken, one as quickly as possible after the other. If observed by compass they should be corrected for the deviation of the ship's heading and the variation for the locality, if by pelorus, which should be set to the true course, the bearings will be read off directly. This is also true if the gyroscope compass is being used, and refers not only to the taking of cross bearings but any bearings. These are then drawn on the chart from the objects observed and at the point of

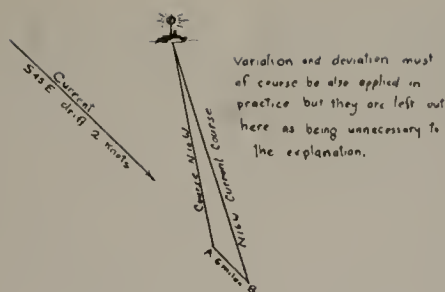


Diagram showing method of laying off course to allow for current or drift

their intersection is the ship's position.

The single bearing and a cast of the leading will often determine the position approximately. Look along the line of bearing as drawn on the chart, and where the depth and nature of bottom obtained agrees with the chart is the approximate position upon which too much confidence must not be placed.

For coastal work a copy of "The Danger Angle and Offshore Distance Tables" by the late Capt. S. T. S. Lecky is indispensable. With these tables the distance from any object whose height is known, may be found by measuring with the sextant the vertical angle subtended by the object, done by bringing its top down to the visible horizon. When the object is very near, the observer should get as low down as possible in order to lessen the error arising from his eye not being level with the surface of the water. On the contrary, if the object be of any

great distance off it should be observed from as high a position as possible. Then entering the tables with the sextant angle and the height of the object, the distance off in miles is obtained. A bearing having been taken simultaneously with the vertical angle, the distance from the object measured on the true bearing as placed upon the chart will give an excellent fix.

The horizontal danger angle method very often comes in extremely handy when passing along a coast where there are wrecks, reefs, or shoals to be avoided and it is wished to save time by passing as closely as possible to the dangers, as by its use the navigator may pass at any distance desired. Two well defined charted objects ashore at a sufficient distance from each other to give a good sized horizontal angle necessary for its employment. Through these and passing the required distance outside the danger is drawn a circle. Then measure with a protractor the angle at the circumference of the circle subtended by the two objects, with the sextant set to this angle observe the objects and as long as they remain the same the ship is the required distance away. If the angle increases the ship is getting inside the circle and toward the danger, but if it decreases she is outside and well clear. In the illustration the danger angle plotted is 76 degrees, which if maintained will keep the ship on the arc of the circle CBA.

By this method narrow passages can be threaded with comparative ease and safety.

The station pointer is an instrument composed of a graduated circle of brass with three arms, one fixed and two movable, which are pivoted at the center of the circle. The fixed arm constitutes the zero of the circle and the movable arms are each fitted with a vernier and reading glass in order that observed angles may be readily read. The arms are held at any desired angle by set screws and a tangent screw on each makes accuracy an easy possibility.

Three charted objects having been selected, the horizontal sextant angle between the first and second is observed together with the angle between the second and third. Then setting the movable arms to these angles the pointer is laid on the chart so that the edge of the fixed arm passes over the middle object and the others over the first and third objects. The center of the instrument is then at the exact po-

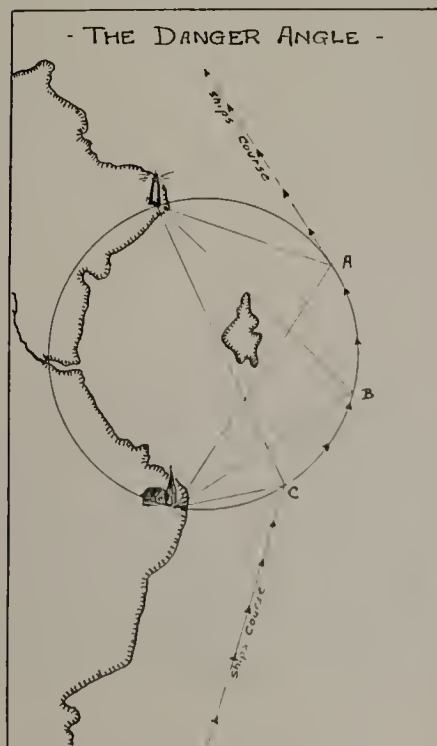


Diagram showing method of laying off course by danger angle to avoid obstructions

sition of the ship, which may be marked by a sharp pencil through the small hole at the center for that purpose.

The effects of tides and currents are particularly noticeable while sailing along a coast. All information referring to them on the chart should be carefully read and where currents exist whose set and drift is known they should be duly allowed for in the courses steered. The most recommendable method for doing this is shown in the diagram. From the point A to the lightship is 30 miles on N 10 W course, which distance it will take the ship making ten knots under ordinary conditions three hours to cover. But a known current for the locality sets SE drift 2 knots, for which an allowance must be made in the course. In the three hours that the ship will take to do the distance she will be set six miles to the SE, so laying off from the point A the direction and amount of the current, the point B is obtained from which the current course is laid to the lightship. This, when steered, should make good the true course desired.

Special attention must be given tides, as often these affect the soundings obtained as well as the ship's course and speed, according to their state at the time of taking the soundings. Tide tables should be part of the navigator's equipment, as, for instance, when navigating around the British Isles their need is imperative if the ship is to be conducted safely. Then also certain ports cannot be approached closely except at high water. The times of high and low water for the principal ports are given with accuracy in the "General Tide Tables of the World" issued by the U. S. Coast and Geodetic Survey. However, if tide tables are unavailable the times of high and low water can be approximately determined by the following method. From Appendix IV, Bowditch, is obtained the position of the port for which the tides are required and the lunar interval for high and low water. The difference of the moon's transit for the preceding date and date of the problem is taken from the Nautical Almanac, and table 11 entered with this at the top of the page and the approximate longitude of the port at the side and the correction taken out. This is added to the time of transit for the preceding day in W longitude, subtracted in E longitude, giving the time of transit at the

local meridian. Then add to this the high water lunar interval and the result will be astronomical time of high water. If A. M., one-half the difference of transit added to it gives the P. M. time of high water, or if the tide found was P. M., subtract one-half the difference of transit and the A. M. tide will result. Time of low water found in the same manner, the low water lunar interval being added to the moon's local transit.

Example-A ship is due in Swansea, Wales, on November 4, 1922, and her navigator wishes to know the times of high and low water at that port for the day of arrival. The position of Swansea lighthouse is 51-37N 3-56W and the lunar interval for high water 5 h 45 m, low water 11h 58m.

G. M. T. transit Nov. 3.....11h 13m
G. M. T. transit Nov. 4.....11h 58m

Diff. transit 45m

G. M. T. transit Nov. 3.....11h 13m
Long. Corr. Tab. 11..... + 1

Local transit11h 14m
H. W. lunar interval..... 5 45

High water Nov. 3.....16h 59m

Nov. 4.....4-59A.M.
 $\frac{1}{2}$ diff. transit +22

High water Nov. 4.....5-21P.M.
Local transit11h 14m
L. W. lunar interval.....11 58

Low water Nov. 3.....23h 12m
Nov. 4.....11-12A.M.
 $\frac{1}{2}$ diff. transit -22

Low water Nov. 4.....11-34P.M.

When approaching a harbor with intentions of entering, become fully acquainted with all its aids to navigation and the system of buoyage. In the United States red nun buoys are found on the starboard hand and black can buoys on the port hand when entering and vice versa of course when leaving. Most other countries differ in this respect. If the harbor is equipped with ranges or leading lights for entering by day or night, locate them by eye as quickly as possible and enter by their guidance and the sailing directions given in the pilot book. Experience in this is the most efficient teacher. Approach the selected anchorage with caution, not forgetting the hand lead, and when finally safely anchored again fix the ship's position by cross bearings.



American motorship Seekonk unloading Pacific Coast lumber onto lighters at the Port of New York. The Wm. Cramp & Sons Ship & Engine Building Company converted the Seekonk to a Burmeister & Wain type diesel-driven motorship. She has been giving a very excellent service in the intercoastal run. Particularly noteworthy is the record made by her Cramp deck winches operated by Westinghouse motors. The actual fuel cost per ton of cargo handled is .3 of one cent.

FLETTNER RUDDER, I

Its Action, Principle and Operation*

**By OLAV OVERGAARD

THE advent of the Flettner rudder into the marine field is but another illustration of the old saying "history repeats itself."

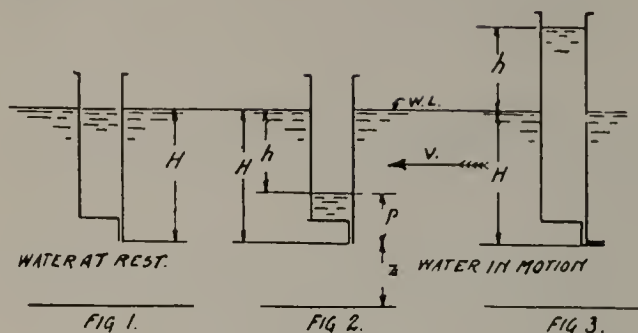
When man first ventured forth to conquer "old man Neptune" he steered his rough hewn craft with an oar. As he grew more proficient in boat building, he evolved a crude rudder. To this, at first, he attached ropes, and by pulling one rope or the other, he directed the course of his boat.

The next improvement was the development of the tiller connected to the rudder shaft. By this and with the aid of pulleys, or proper gearing, he managed to control his ship remarkably well.

The size of the vessel, however, grew by leaps and bounds, and it was soon realized that it was too big a task to steer them by manual power.

By this time the steam engine had already been invented, and naturally the attempt was made to utilize it to manipulate the rudder. Although both the rudder and engine were constantly being improved, it was impossible to obtain a combination of these with as high a degree of safety and economy as was desired.

Finally Anton Flettner succeeded in developing a rudder which makes it possible to steer vessels up to



8000 tons by hand with a surprising ease and perfect control, and which, by its simplicity, practically eliminates all hazards due to faulty gear. In other words, man has been enabled to steer his huge modern ships with less effort and risk than was experienced in handling the crude craft of the earliest days of navigation.

Principle of Operation

While the ordinary rudder depends exclusively upon mechanical or manual power for its operation, the Flettner rudder utilizes the energy created by the pressure differences which arise when a body is moving through stream-lines.

The principle of the Flettner rudder involves the motion of a fluid past a solid at rest, or the motion of a solid through a fluid at rest, both being mathematically interchangeable and theoretically subjected to the steady motion formulae, known as Bernoulli's Theorem; according to which pressure and velocity energy are mutually convertible, the sum of the two remaining constant.

Applying the foregoing to Figs. 1, 2, and 3, we have: When the water in the channel is at rest, the level in tube, Fig. 1, will remain the same as outside (static pressure). If, however, the water commences flowing with a velocity say V , the level in the tube, Fig. 2, falls a certain distance, h , which is identical

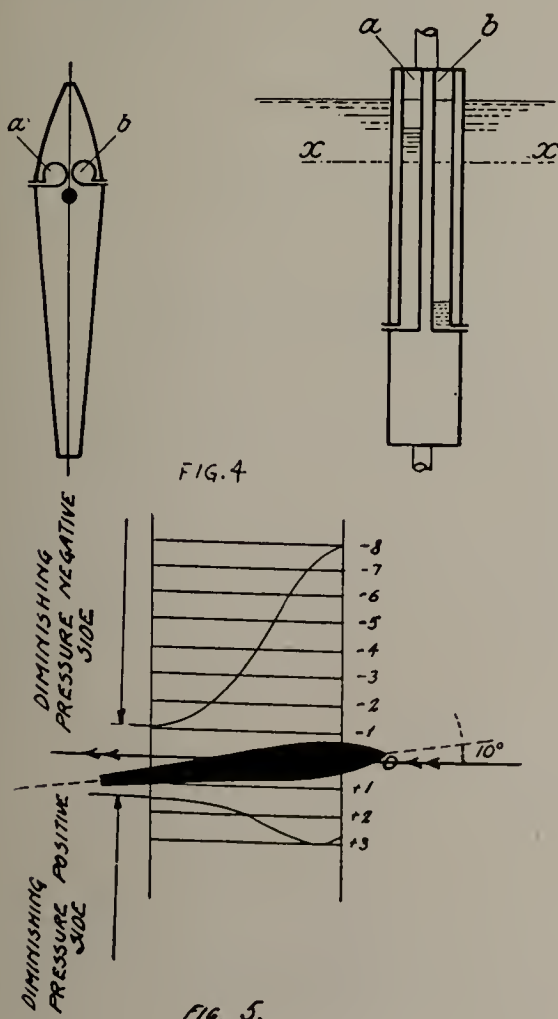
with the velocity head $h = \frac{V^2}{2g}$, shown in Fig. 3.

The water column p remaining in the tube, Fig. 2, represents the difference between static head H and velocity head h . Hence the value of h is constant for each particle passing a fixed point in the fluid, provided the velocity is constant. Knowing the velocity head, we may calculate the velocity, or vice versa, by the formulae—

$$h = \frac{V^2}{2g} \text{ and } V = \sqrt{2gh}$$

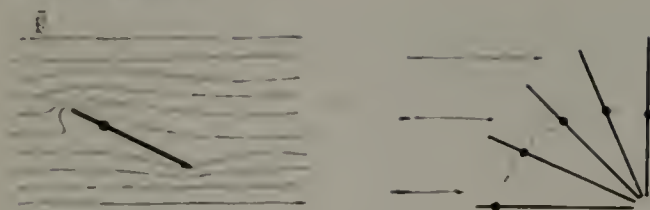
which represent the law of pressure and velocity energy as applied to the Flettner rudder:

The operation of the Flettner rudder depends upon the pressure difference created when one of two planes



*Reference: Werft Reederei Hafen.

**Marine Department Th. Goldschmidt Corp., 13 William street, New York.



Figs 6 and 7

of a given ratio of areas (the steering fin) changes its angular position with respect to the other (the main rudder plane), thereby retarding the current on one side while accelerating it or forming a suction on the other.

In order to make it easier to follow the conception involved in practice, we may visualize a rudder with a tube inserted on each side of the center line, a little forward of the axis as indicated in Fig. 4.

It follows that the level in both tubes will remain the same (level \times) as long as the rudder is in zero position, and travels forward at a constant velocity V ; i. e., the pressure head loss is the same in both tubes. If, however, the rudder is laid over to left, the water will rise to a certain height h in a , whereas the level in b will fall through a distance considerably greater; i. e., the pressure head loss on the right, or negative, side is very much greater than the increase in pressure head on the left, or positive, side.

How the Rudder Influences the Stream Lines

Fig. 5 shows the results of an experimental investigation of the pressures existing on the two sides of a rudder plane in a given angular position with respect to the stream, 10° in this case.

In order to understand this great pressure loss on one side and comparatively small increase on the other, it is necessary to visualize the paths which the stream-lines take when obstructed by a body such as a rudder plane.

Thus, Fig. 6 indicates how the stream-lines on the positive side seem to avoid this surface of the plane, partly because the opposite negative field, or suction side, extends its action to the positive side and sucks the stream-lines from their paths. This suction creates an increase in velocity with a corresponding contraction of the stream-lines toward the center of the flow, the stream-lines further out, of course, being less and less affected. It will now be seen that the action taking place on the negative side is a conversion of velocity head into pressure head, in accordance with

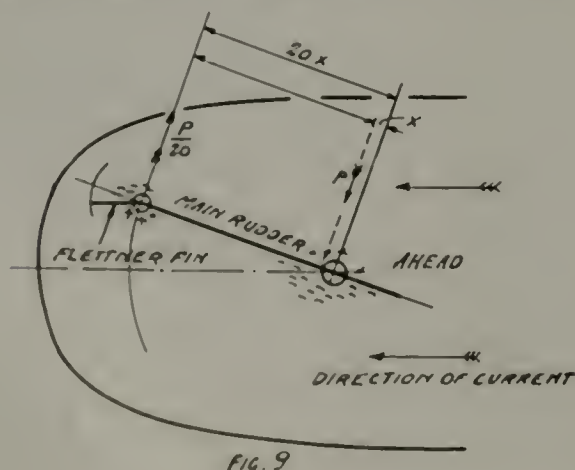


FIG. 9

Bernoulli's Theorem. The same principle is utilized both in the Venturi Meter and in the draft tube of a turbine. It is also obvious that the velocity and consequently the corresponding pressure loss, or suction, increases as the amount of water passing through the contracted field increases.

The work of Dr. Gibson and Dr. Hochschildt explains how the most favorable conversion of velocity and pressure takes place at certain angular positions of a plane subjected to a current, and by studying

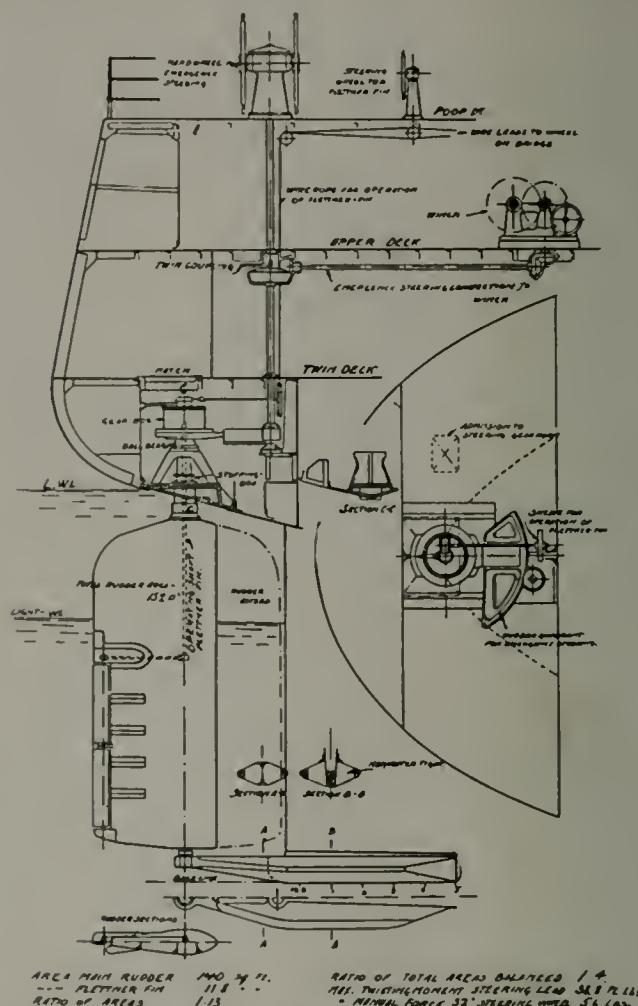


FIG. 8 SINGLE PLANE FLETTNER RUDDER - J.S. OENWALD'S 9000 TON.

Fig. 6 more closely, it becomes obvious that there exists a certain rudder angularity where the efficiency of the rudder begins to drop.

As the pressure head loss or increase in velocity appears at the leading edge of the plane placed in the direction of the current, the point of application

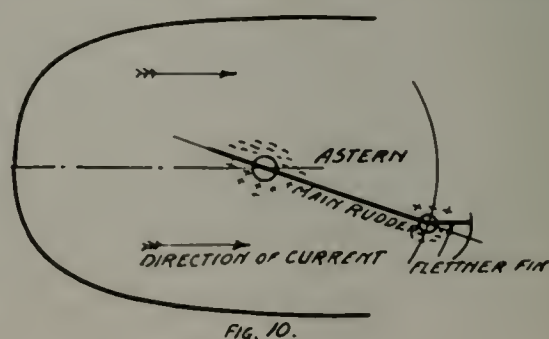


FIG. 10.

of the force will also come closer to this edge. By increasing rudder angle, however, the point of application moves aft until at an angle of 90° it has reached the center of the plane. Fig. 7 illustrates this.

When comparing Fig. 7 with Figs. 9 and 10, it will be seen that the pressure difference created by the steering fin on the Flettner rudder opposes the force acting on the main rudder; i. e., the latter is steered by means of the former.

Figs. 9 and 10 show diagrammatically the principle involved. Pressure loss is here indicated by a minus and pressure increase by a plus sign.

Fig. 9 indicates the main rudder with the ship going ahead, the Flettner fin being held in a certain angular position with respect to that of the main plane. Comparing this sketch with Fig. 6, it will readily be seen that a small suction field, or negative pressure, is created on the convex side near the axis of the fin, while a very small positive pressure exists on the opposite side.

If the Flettner fin had been placed parallel to the main rudder, the point of application of the pressure

P would have been a little aft (distance \times) of the main rudder axis; the rudder plane would, therefore, have been forced back to its zero position.

The pressure difference acting on the after edge at an arm of, say, $20\times$, however, causes the point of application to move towards the axis and thus restores equilibrium.

Briefly it may be said that the operation of the rudder is effected by the force

$$\frac{P}{20}$$

acting on a long arm $20\times$ opposing the force P acting on a short arm \times and we have:

$$P \times = \frac{P \cdot 20 \times}{20}$$

The ratio 1:20 is here an assumed one. Actual construction generally allows a more favorable ratio. Sketches 9 and 10 indicate the mechanical principle involved in the Flettner rudder, the hydrostatic one having been previously described.

A MARITIME OX CART

By SEA FLAME

FROM the earliest dawn of history man has endeavored to apply power other than his own to propel machines and boats. Almost every conceivable means to effect this has been tried. Wind, men, beasts, tides, currents, steam have all been used, and the means by which the power was applied have been as varied as the prime movers. Perhaps the most unique vessel in all the lists was one that in 1860 was built on the Willamette River in Oregon.

The builder of the strange craft was a farmer on the riverside, who became dissatisfied with the high freight rates he had to pay for the transportation of his farm produce. In those days steamer rates were high, and it was no uncommon thing for a vessel to pay for herself in a year after launching. So Benjamin Hickworth, with Yankee shrewdness, put his idea into action and being a fairly wood mill-wright, as well as a farmer, built himself a craft on the banks of the river near his farm. The vessel was not much to look at, being of the well-known canal boat type. She was about eighty feet in length and thirty in beam, with a depth of hold of six feet. She was staunchly and well fashioned, though with none of the graceful speed lines of the steam river craft. She was not intended for speed, but rather for carrying.

But her power plant. Shades of Watt and Fulton! Instead of steam engines and conventional boilers, Mr. Hickworth built a sort of tread-mill at the after end of the boat, which by gearing and chains was arranged to drive a stern wheel. The treadmill was operated by sixteen oxen, of an average weight of about two thousand pounds each. Hickworth calculated that the beasts would walk up the continually falling platform at a rate of about two miles per hour. This would give an energy of close to 40,000 foot pounds per minute for each ox. This multiplied by sixteen would therefore ensure the development of some twenty horse (ox) power.

So the matter worked out well in theory, and the contraption was tried out. It did fairly well on the trial trip, and a big load of hay and grain was piled onto the queer vessel, and a start made for Astoria,

about a hundred miles down the river, where cattle and horse feed was in demand for the logging camps. The "oxer," to coin a name for the boat, did pretty well going down stream with the current helping, but while a few miles above her port of destination, the strong flood tides in from the ocean set up forces in an opposite way, and the strange craft began to lose ground. To avoid the incoming tide, and to take advantage of inshore eddies, the pilot steered the boat close in towards the banks. This was fatal, for the unwieldy and slow-moving hull stuck on a jutting sand bar at near a high tide.

And the motive power had to be fed all this time. The sixteen oxen ate heartily, and the cargo quickly vanished. Mr. Hickworth did all he could to get a part of his freight to market, but with no avail. Ultimately he took his troubles philosophically and fattened his engines well with the balance of the cargo. Fortunately there was plenty of water alongside, so he did not have that to worry about. Selling his fat beeves on a slumping market, he left the hull of his vessel to rot on the sandbar and returned to his farm, a poorer and probably wiser man.

YOKOHAMA CUSTOMS INSPECTIONS

THE Yokohama Maritime Customs have decided to simplify somewhat the procedure of inspection of imports, which have been greatly increased since the earthquake a year ago. The "red tape" incident to customs inspections has caused such long delays in delivery of goods that the import merchants have found it necessary to request the authorities to remedy the situation.

It is reported only one inspection of 131 items subject to the specific duty tax will be conducted in the future. Among these items are cereals, pulp, ores, coal, copper, iron, tin, lead, aluminum and rails. These have been checked heretofore, once by inspectors and again by checkers. The first inspection will be abolished. Inspection of large cargoes whose quantity is known, as peanut oil, bean oil and the like, will be finished on board ships lying outside the harbor.



The Southern Pacific Steamship Lines' new freight and passenger coastwise liner, Bienville

NEW COASTWISE LINER

Southern Pacific Steamship Lines Place in Commission the Bienville, Built at Todd's Tacoma Yard, to Designs of A. S. Hebble

AMOS S. HEBBLE, superintending engineer of the Southern Pacific Steamship Lines, has been receiving many congratulations from his friends in New York on the splendid appearance and performance of the fine new passenger and freight steamer Bienville, which was built at the Todd Drydock & Construction Corporation, Tacoma, Washington, under the supervision and to the designs of Mr. Hebble.

Every one who has any appreciation of naval architecture gets the impression from looking at this steamer that here is a thoroughbred. Her sheer, her rake of mast and stacks and the general conformation of her hull and superstructure convey an impression of smooth, efficient power, combined with beauty of line. The ability of Mr. Hebble as a designer is not new to Pacific Coast ship builders and operators. It was he who designed and supervised the construction of that splendid tanker, the Tamiagua, which has been heralded by Pacific Coast shipbuilding enthusiasts as the largest commercial vessel ever turned out on the Pacific Coast.

The name, Bienville, after the custom of the Southern Pacific Company, suggests the early history of their southern terminal, New Orleans. It was Jean Baptiste Lemoine de Bienville who founded the metropolis of Louisiana.

The vessel has the following general characteristics:



Mr. A. S. Hebble, superintending engineer of the Southern Pacific Steamship Lines

Length over-all	445' 0"
Length between perpendiculars	427' 0"
Beam, molded	57' 0"
Depth, molded	37' 6"
Draft, loaded	25' 6"
Displacement, tons	11,800
Gross tonnage	7,916
Net tonnage	4,842
Shaft horsepower	7,100
Sea speed, knots	16
Deadweight tonnage	6,600
Cubic cargo capacity, ft.	403,000

She is constructed of steel on the Isherwood system, and is of the hurricane deck, coastwise type. A complete double bottom fore and aft and seven steel water-tight bulkheads subdivide the hull in a manner calculated to give maximum practical safety at sea. Four cargo holds and six deep tanks for fuel oil are provided, giving a cargo capacity of 403,000 cubic feet.

Passenger Accommodations

First class accommodations are provided for 237 passengers above the hurricane deck and third class accommodations are provided for 111 passengers on the main deck. The foremost thought in the design of accommodations for both classes of passengers is to provide surroundings at once attractive and comfortable. The interiors, both of the staterooms and of the public rooms, promenade spaces, and passageways are so planned and decorated as to create an atmosphere resembling very much that of the first class family hotel. This idea is carried out very much in the selection of rugs, draperies, hangings, and furniture as well as in the color scheme of wall decorations and the design of panelings. The deck heights are considerably greater than is ordinarily the case in a coastwise steamer, this additional space making for good ventilation and comfort, and giving an airy spacious effect. The motif throughout is of

the American colonial period, with delicate tinting in pastel shades of the painted surfaces and light mahogany finish for the woodwork. Long, graceful, narrow panels and light moldings intensify the height effect and give a rich appearance. Very effective use has been made of ornamental iron grillwork in balustrades and rails on the stairways and around floor openings.

All first-class passenger staterooms are outside rooms, insuring natural ventilation and comfort at all times. These rooms have large sliding windows operated from inside, and are furnished so as to give many combinations—rooms with twin beds and private bath, with double bed and private bath, with single berths and folding Pullman berths, and with or without connecting baths.

Individual Electro-Vapour heaters are used in the staterooms. Each berth is fitted with reading lamp and each room with an individual electric fan.

Public Rooms

The music room in the forward part of the promenade deck is paneled in white and furnished with old mahogany furniture, mahogany trim on the walls, tapestry hangings, and with the latest electric player piano. The smoking room is in old English quartered oak design with an art glass dome and with the floor laid in rubber tiling. Connecting with this room is the observation lounge with a large dance floor. The dining saloon is capable of accommodating 200 persons at one sitting,



Interior of one of the de luxe twin-bed cabins, with connecting bath. Note the effectiveness of long wall panels

with small tables seating from four to eight persons at each table. This room is located forward on the saloon deck. It is paneled in colonial design with mahogany wainscoting panels and white panels above. The promenade deck provides a spacious promenade with the forward end enclosed in glass.

Third-class Accommodations

The third-class passenger accommodations are located on the main deck forward and have their own dining room, pantry, and public rooms adjacent. Quarters for cap-

tain, licensed officers, petty officers, and their mess rooms are located on the boat deck in steel deck houses. The seamen are quartered in the hurricane deck forward; the firemen and galley crew are amidships adjacent to the boiler casings and galley; and waiters are berthed aft on the main deck.

Every device known to modern science has been provided to insure against fire. Every passenger room is provided with a thermostat. Hold and cargo spaces throughout are fitted with the Rich fire detecting system. There are 34 hose-outlets and 1600 feet of fire hose, backed by powerful fire pumps, providing ample protection for the superstructure and deck. A large Firefoam installation insures minimum risk from oil fires in the boiler and engine rooms.

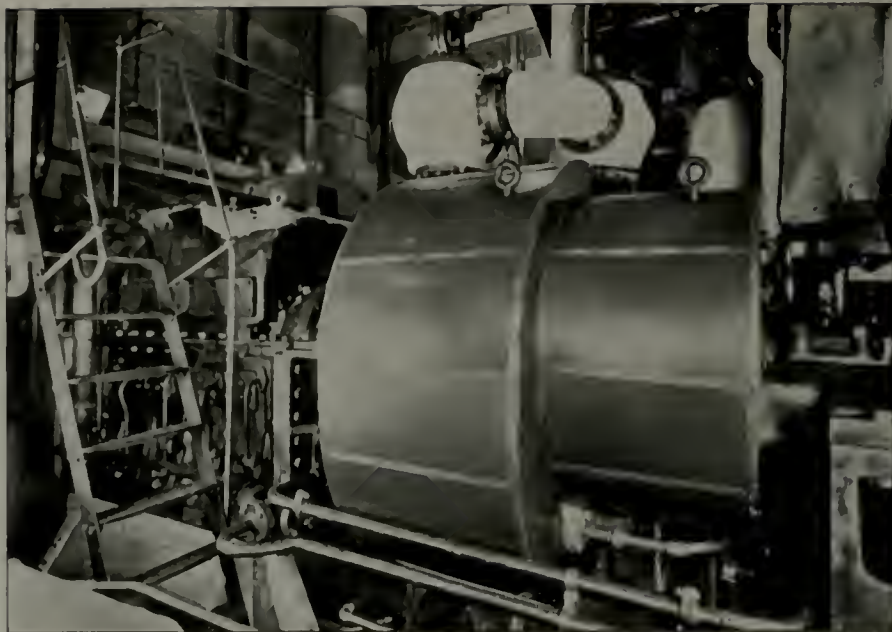
Life saving equipment is installed to give adequate boatage for every person in a maximum passenger list and the entire complement of crew.

Propelling Machinery

The Bienville is driven by a cross-compound steam turbine through double reduction gears to a single screw propeller. This turbine is of the De Laval type supplied by the De Laval Steam Turbine Company. A full description will be found in the April 1924, issue of Pacific Marine Review. On trial it has delivered considerably in excess of 7100 brake horsepower at 85 revolutions a minute propeller speed, giving the



A portion of the main dining saloon of the Bienville



At left, forward end bearing of high pressure side, and above, broadside view of low pressure side and gear box of the De Laval cross-compound turbine on the Southern Pacific Company's steamship *Bienville*.

vessel a sea speed of 16 knots. Steam for these turbines is provided by six oil burning Babcock & Wilcox water-tube boilers built to carry 250 pounds working pressure and to give 130 degrees superheat at the throttle. Needless to say, the condenser, air pumps, and all auxiliaries connected with the main steam plant are designed of large

proportions for tropical climate use.

Auxiliary Machinery

All of the deck machinery is driven by steam and includes a windlass and two capstans forward and two capstans aft, and ten double cylinder cargo winches. The steam steering engine is of the right and

left hand screw type, and is located aft over the rudder stock with pilot house control. An electrical hydraulic auxiliary steering gear is also provided. The deck machinery and steering gear are built by Hyde Windlass Company. Two 6-ton Brunswick ice machines are installed which take care of ample storage space for passenger and crew stores.

DIESELIZING THE JUNK FLEET

THE American merchant marine is not alone in its determination to dieselize its fleet. Our Celestial friends across the Pacific are also seeing the light and on Chinese harbors and on China's rivers and canals the chug of the motor is drowning out the picturesque song of the river boatman.

Many years ago the writer was engineer on a Chinese river steamer. This vessel plied between Hankow and Ichang on the Yangtze-Kiang. Also there were many workboats on the same stream. Now don't think what follows is a "yarn," for it is truth. One trip up we saw a solid line of these vessels, bows to bank, and side by side, close together as they could be moored, for a distance of three miles. Of course these workboats were junks and man-powered, but none of them were under a hundred tons burden, and many were several hundred tons.

That one is hard to believe, but any good American will believe this one: The day of the coolie propell-



Chinese freight junks in the Whang Poo river near Shanghai

ed craft is practically over, for I am told that many of the junks or workboats are being motorized now,

and the diesel is chasing out the gas engine, as the gas did away with the coolie oarsman.

PORTS OF THE PACIFIC

IMPROVEMENTS DEVELOPMENTS ACTIVITIES

ASTORIA DEVELOPMENTS

IN a marine and industrial development which takes rank with the most important ever launched at Astoria, Oregon, the Standard Oil Company (California) has made Astoria a fueling station of first rank for oil-burning vessels and at the same time has opened the way for the unfolding of a new branch of the city's marine and shipping activities in the field of oil handling and distribution.

Launched within the past year, this Standard Oil Company's project early in January made Astoria capable of supplying fuel in any quantities to ocean vessels with expedition not exceeded on the Pacific.

The ship-fueling plant is located at the Port of Astoria Terminals. Already it occupies a tract of five acres. This land, however, will not be sufficient for the station planned by the company, which has an option on an additional five acres adjoining the present plant, in itself immediately adjacent to Pier 3 of the terminal system.

When it entered the Astoria field on a large scale, the Standard Oil Company did so from a variety of reasons. First of these was the growing importance of Astoria as a seaport and the certain future ahead of it. Secondly, the fact that the port is closer than any other major harbor of the Pacific northwest to the sources of oil in California.

This latter factor is expected to effect a large saving in the operation of the company's tank vessels. It has been calculated that tank steamers can make five round trips from California to Astoria in the time that it required for three round trips from California to any other northwest fueling station.

While the construction of a ship-fueling station is the first object of the company's activities at Astoria, the distribution of oil and oil products from Astoria by rail to points east of the Cascade Mountains, to which Astoria enjoys parity rail rates with all other

northwest ports, is expected ultimately to become as important a part of the Astoria plant's activity as the fueling of oil-burning vessels.

As Astoria enjoys a rail rate parity with other ports on California shipments to the Inland Empire region, it will of course be cheaper for the company to ship its products to Astoria for distribution by rail than to send its tank vessels to more distant ports from which the rail shipments could be made.

The Astoria fueling station as it is at present constituted is already a gigantic affair. The central factor in the plant is an enormous fuel oil storage tank with a capacity of 85,000 barrels of oil. This tank is said to be the largest size used by the company at any of its stations. In addition, there are a number of other smaller tanks for use in gauging the flow of oil from the big tank.

The power plant, pump hoist, and oil-heating equipment is the latest and most efficient used by the company. The pump which delivers the oil has a capacity of 2000 barrels an hour and is said to be the largest of its kind employed by the company. The plant is fully equipped with steam pipes for heating the flowing oil in order to expedite its delivery.

Two pipelines, one 12 inches and the other 8 inches in diameter, run from the station around the three water faces of Pier 2 of the terminals. There are five headers on these pipes, three on the face of the pier and one on each of the slips. Thus several vessels can be fueled at one time if necessary. Discharging tank steamers lie at the face of the pier and pump from three of their tanks at the same time.

Later similar pipelines will be run on each of the other two piers, thus making it possible for vessels to be bunkered while they are handling cargo, without shifting and without suspending loading or discharging operations.



The municipal terminal at Port Astoria



San Francisco's Union Ferry Depot. The center of the waterfront and the administration office of the Board of State Harbor Commissioners

PORT MANAGEMENT AT SAN FRANCISCO

IN view of the perennial agitation for the transfer of the control of the port of San Francisco from the State of California to the City of San Francisco, we herewith submit a few pertinent facts concerning the present management. "Let well enough alone" is a safe motto.

Has the State of California kept faith in supporting the harbor liberally by bond appropriations? The first bond issue was submitted to the people for \$600,000 to build the Ferry Building. That was carried by a very narrow majority because of the propaganda put out by the opponents of the bonds at that time making the argument that it was simply a bond appropriation to build the Ferry Building for the use of the then Central Pacific Railroad, now the Southern Pacific Company. Therefore, the bonds were carried by a very narrow margin.

The next bond issue was in the legislature of 1903 for \$2,000,000. The legislature authorized the submission to the electors of the State for said bond issue. It was submitted to the people in the November election of 1905. The shipping interests of San Francisco, headed by Captain W. H. Marston, Robert Dollar, and other prominent citizens, raised a \$10,000 fund to educate the people of the State to the fact that San Francisco harbor was a world harbor; that it belonged to the people of the State of California; that the valleys of the State and the mountain counties were as much interested in the development of this port as was San Francisco; that it was under State control, and that the State of California must vote to

support proper development so that trade and commerce could have the conveniences and facilities for handling the great cargoes that were then coming to the port and take care of all future growth. That bond issue carried by about a 75,000 majority, when the voting population of the State was one-half what it is today.

The following bond issues amounted in all to an additional \$20,000,000, of which \$15,000,000 are still outstanding with \$5,000,000 in the treasury unsold. The arguments made in 1905 educated the minds of the voters of the state to the harbor's needs and these issues were all put over with an overwhelming majority. These bonds are not bonds that are a lien upon the wharves and piers that have been constructed with that money, but, on the contrary, they are bonds of the State of California.

There are now \$15,000,000 of bonds outstanding, of which not one dollar has been provided for a sinking fund for their redemption, but the faith and credit of the State of California is pledged to pay these bonds. San Francisco enjoys that distinctive advantage over all the municipal harbors in the State of California. The State of California should continue to administer by appointment of its commissioners by the Governor until such times as these bonds have been retired.

If San Francisco is sincere in her belief that she should have control for the sake of pride and sentiment, she should first issue \$15,000,000 of bonds of the City and County of San Francisco and pay the indebtedness

that the State of California has pledged its credit for.

All the property of the State of California has pledged its credit so that this harbor can receive the proper support and development. California has been most generous with the harbor of San Francisco.

The mere transfer of the managerial control means nothing without a higher efficiency and a more economical management because the shipping interests and the great commercial interests have only one thing in mind as to its control—economy and efficiency. The harbor of San Francisco is one of the big commercial assets of San Francisco and California, and the shipping interests spend \$83,000,000 annually in the city of San Francisco. Their interests should be considered in the transfer of the harbor from state control to city control.

All shipping men, importers, exporters or business men who have business with the Port of San Francisco are fully satisfied with the management as it has been during the past sixty years.

Historically, San Francisco attempted to manage the harbor prior to 1860, when the present organization was approved by the State Legislature, and the business interests of San Francisco were responsible for the change in management. The governors of the state have never attempted to exercise any political control except to have the authority to appoint the commissioners.

Insofar as any future bond indebtedness is concerned, it is very probable that no additional bonds will

be necessary for the proper port development for many years to come. It will be better that future improvements be made out of surplus income, as that method will very materially help to equalize the cost of maintenance, up-keep and new construction. The organization of the Board of State Harbor Commissioners is flexible, it having a large power to adjust itself to meet all the demands that are fair and equitable made by the business and shipping interests of this port.

Municipal Harbor Control

Every one of the harbors controlled by the various municipalities has had a very complicated and unsatisfactory management for the reason that the appointing power for the appointment of the various commissioners must be the mayor of the city; that the same is too local and too much attached to the body politic. The administration cost of municipal harbors is very much in excess of the cost in the present management of the harbor of San Francisco. The further removed from local political activities, the better the management for any public work, and the harbor is a very important part and branch of public work. It is a great industrial plant and requires more careful management than ordinary city affairs receive.

Louisiana State Control

New Orleans is the only other harbor in the United States that is under complete state control. The harbor commissioners of the Port of New Orleans are appointed by the Governor of the State. The citizens of the State of Louisiana and the City of New Orleans made a long legal fight to recover their water frontage and, in 1906, the Supreme Court of the State of Louisiana claimed that the grants given away

to railroads and private interests for years and years by legislature. All publicity that emanates from the Board of State Harbor Commissioners discusses nothing but San Francisco were void and that the legislature had no power to make such grants and, therefore, restored the title of this water frontage to the State of Louisiana, and the Governor, by proper legislation, was authorized to appoint the commissioners.

The people of the State of Louisiana were wiser than those of the State of California. They amended their constitution so that the control of the Port of New Orleans is a constitutional one with a very large and elastic power, or, rather, large and elastic powers, even greater than those of the port organization of the Port of San Francisco. They broadcast to the world through circularization the fact that their port is a state controlled harbor and that the governor does appoint its commissioners. There is no agitation in the City of New Orleans at any time for the transfer of its great water front back to the City of New Orleans or private interests.

Is the Port of San Francisco in any different position than the Port of New Orleans? San Francisco harbor has lost no advantages, past or present, in her wonderful development of harbor facilities by being technically under state control and by having the governor appoint the commissioners.

There has not been during the past sixty years, during which time the management has been technically under the control of the state, (the governor appointing the commissioners), any criticism against its management by these commissioners with the exception of the ordinary passing criticism, and that criticism would follow any commis-

sioner no matter how appointed, whether by the chief executive of the city, the governor of the state, or the president of the United States. cisco and the wonderful port that is the front door to this growing city.

The successful management of any large industrial public utility such as the Port of San Francisco depends on unified independent administration removed as far as possible from petty local politics. We endorse the present administration of the Board of State Harbor Commissioners at San Francisco because we believe that administration fulfills this condition. If, at any future date, we can be shown that this condition is better fulfilled by a transfer to municipal ownership and operation, *Pacific Marine Review* will gladly promote such transfer.

GENERAL ELECTRIC RADIO EQUIPMENT

The President, the United States Postoffice Department mail boat, at New York, is to have a new voice. The spark transmitting set is to be superseded by a 200 watt radio tube transmitter, an order for which has been placed with the General Electric Company.

In deciding to change from the spark to the tube transmitter, the Postoffice Department was influenced by letters received from New York radio fans, who complained of interference from the President's spark set. Listeners to broadcast entertainment and those reaching out for distant stations reported that the spark set blotted out everything else while it was in operation. A mailboat must have a radio transmitter, so the Postoffice Department has decided to adopt the tube transmitter, which is free from "mush" and harmonics.

(Continued on page 131)



An aerial perspective of the waterfront and the city of San Francisco

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

LUBRICATING OIL TANKER

Standard Oil Interests Building a Motor Tanker of Unique Design, Especially Fitted to Carry Numerous Grades of Lubricants with Minimum Risk of Contamination

THE Standard Oil interests have now under construction at the French yard Chantiers et Ateliers de la Gironde, Bordeaux, a 6450 deadweight ton tanker, which is especially designed for the purpose of carrying various grades and types of lubricating oil with minimum risk of mixing or contaminating these grades.

The principal characteristics of the vessel are:

Length over-all	401 feet
Beam, molded	55 feet 6 inches
Depth, molded	28 feet 6 inches
Displacement	9825 tons

A large portion of the parallel middle body of the vessel is equipped with cylindrical tanks in pairs athwartship and with 7 pairs fore and aft, making 14 tanks in all, each tank having a capacity of about 300 tons. The contents of these tanks are to be discharged by five electrically driven rotary type cargo pumps located at the center line of the vessel between the pairs of cylindrical tanks and on the tank top of the double bottom.

As will be noted from the diagrams of cargo piping reproduced herewith, the pumps and their connections

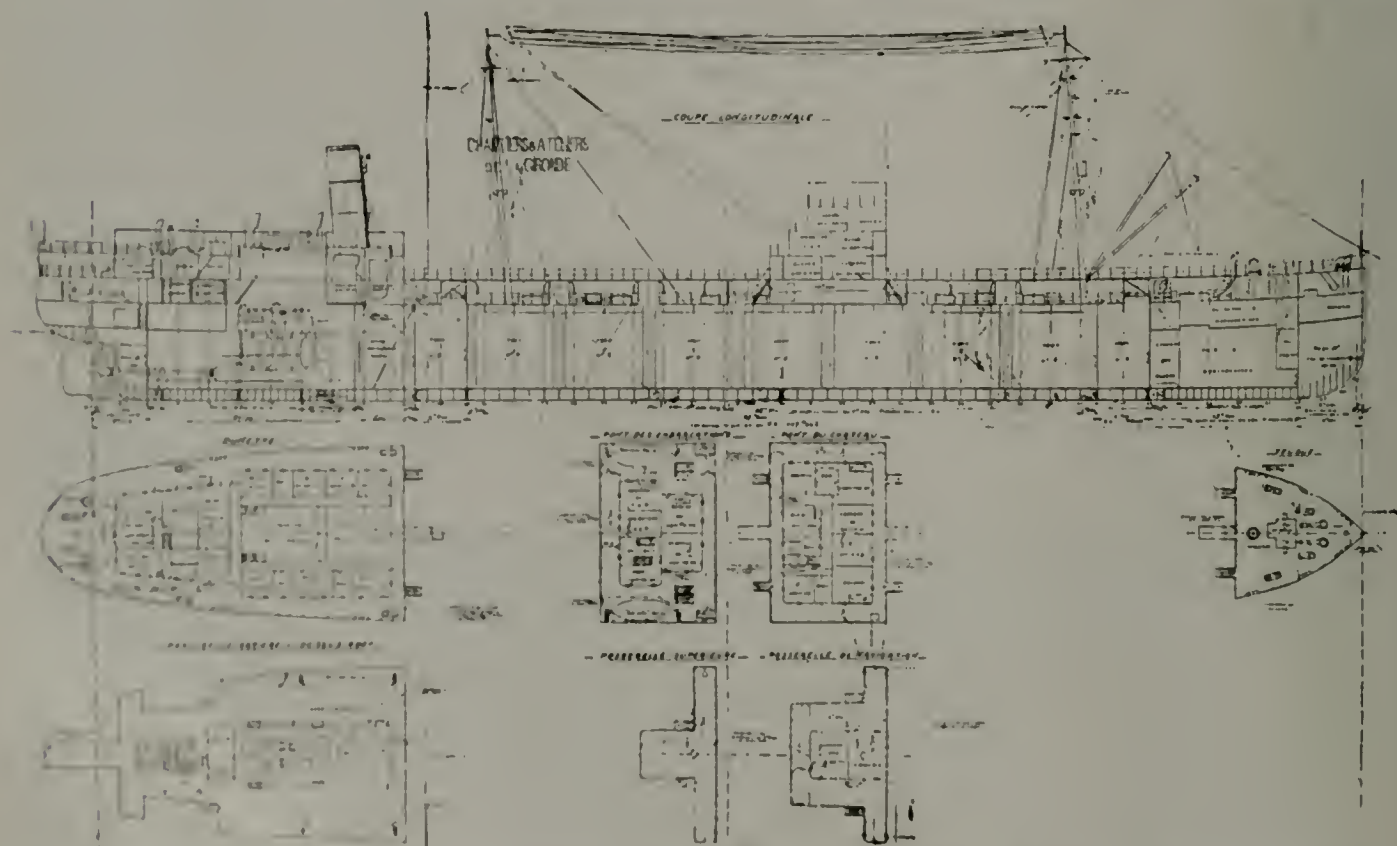
are so arranged that any one pump can be operated on any tank in the vessel and yet upon suitable valve and cross-over arrangement the preservation from impurity of the different grades of lubricating oils has been absolutely safeguarded. Forward and aft of the central compartment housing the cylindrical tanks there are athwartship rectangular tanks of standard design also served by the five cargo pumps.

Machinery

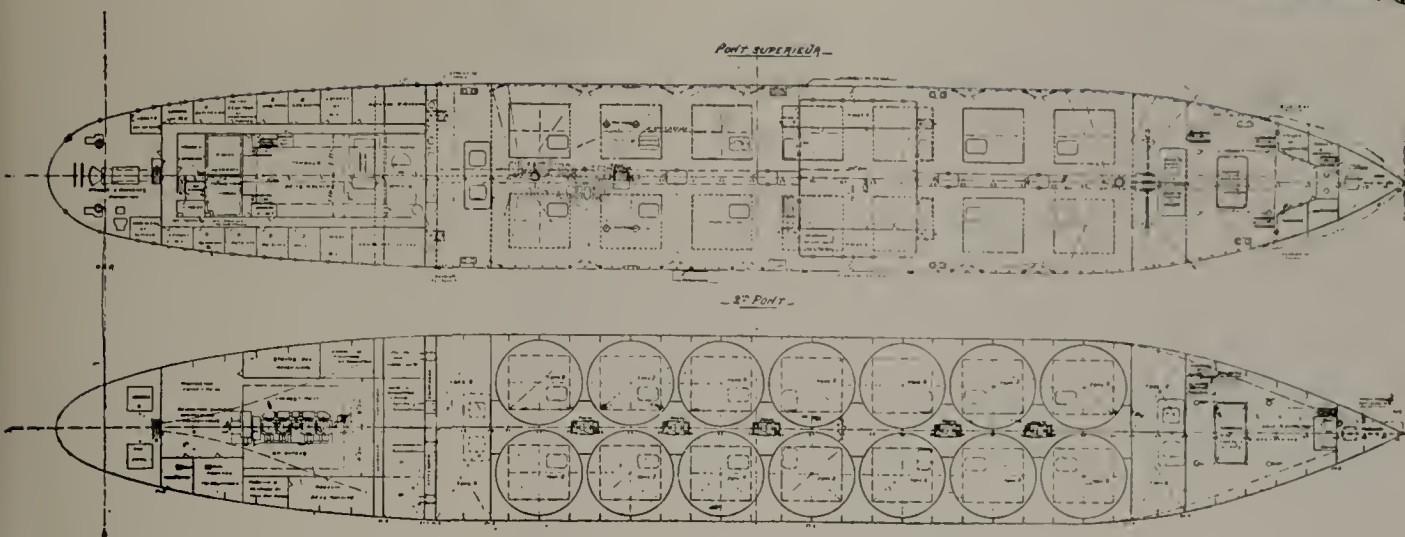
The vessel is to be single screw, driven by one 2-cycle, 4-cylinder, single-acting, full diesel engine built by Sulzer Bros. at Winterthur, Switzerland, and installed by the Chantiers et Ateliers de la Gironde. This engine is capable of developing 1850 shaft horsepower at 90 revolutions a minute, and it is anticipated that this power will easily drive the vessel at the required speed of 11 knots an hour.

All of the auxiliaries, including deck winches, windlasses, steering gear, cargo pumps, and galley equipment, are electrically operated. A small Babcock & Wilcox donkey boiler is installed for the purpose of heating the cargo oil when required.

All accommodations for officers of the deck depart-



Inboard profile and superstructure plans of 6450-ton deadweight capacity lubrication oil tanker building at Bordeaux for Standard Oil interests

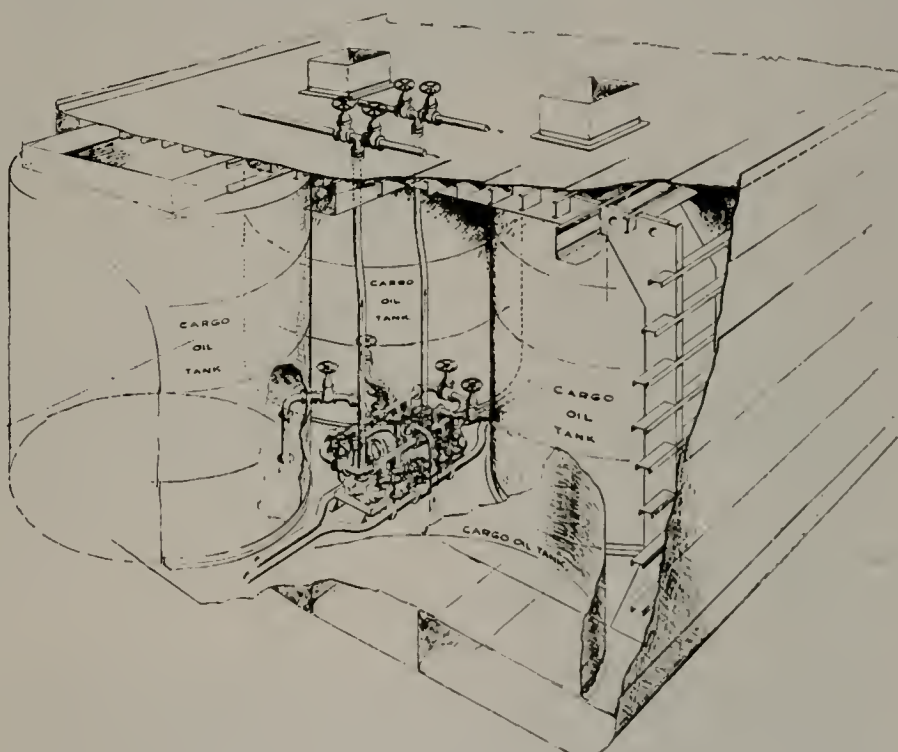


Plans of main deck and holds of the new Standard Oil tanker for lubricating oils, showing the location and arrangement of the circular lubrication oil tanks, the cargo pumps, and the propelling machinery.

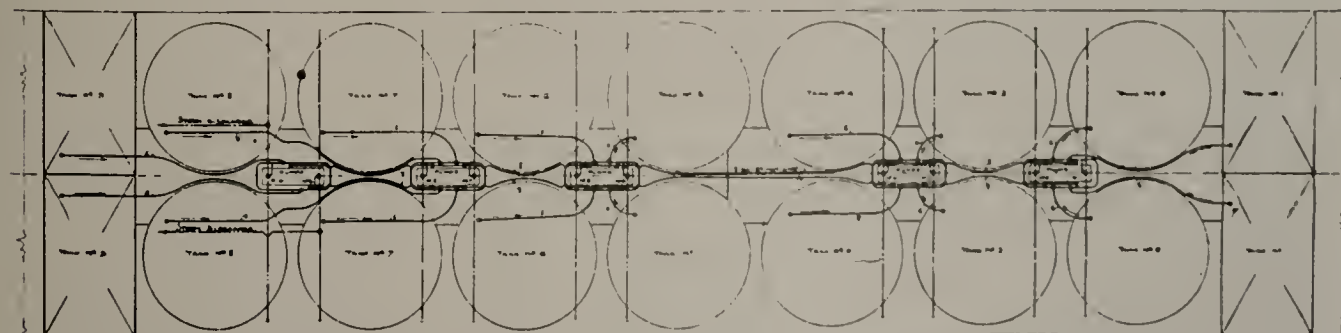
ment are located in the bridge house, the engineering officers and unlicensed men and the mess rooms are located aft. Accommodations are so arranged that not more than two unlicensed men are in any one room. Liberal provision is made for the ventilation and for the heating along Standard lines.

It is anticipated that this unique tanker will be put in operation in September of this year in trans-Atlantic service, between New York, Gulf ports and France.

Elisha Webb & Son Co., 136 South Front street, Philadelphia, has issued a catalog of their Webbperfection (trade-mark) galley ranges, bake ovens, broilers, steam cookers, jacket kettles, coffee and tea urns, steam tables, and cooking apparatus of special design for steamships, yachts, tugs, and vessels of every description. This company confines its operations exclusively to marine requirements, and the catalog is profusely illustrated with photographs of every type of equipment for galley use.



A schematic silhouetted profile showing the arrangement of four circular cargo oil tanks and one of the motor driven cargo pumps with its piping. The pipe connections and valves are so arranged that any one of the five pumps can be used to drain any one or any combination of the fourteen circular tanks or of the four thwartship tanks. Note in this sketch the Isherwood system of ship construction.



Plan of the parallel midship body of lubricating oil tanker showing arrangement of cargo discharge piping

KURENAI MARU

First Japanese Passenger Motorship. Propelling Machinery Supplied by Burmeister & Wain, Copenhagen

THE motorship Kure-nai Maru is the first Japanese motorship built by the Osaka Iron Works at their Sakurajima yard and equipped with original Burmeister & Wain engines, shipped from their works at Copenhagen.

She is to maintain the Osaka Shosen Kaisha service on the Kobe to Beppu run, which has been for many years maintained by the owner's steamer of the same name.

The general character-

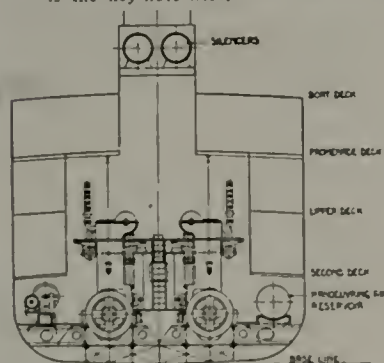
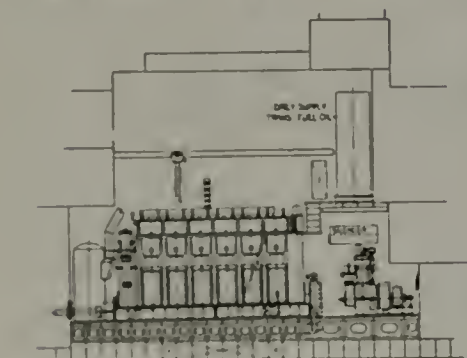


A de luxe stateroom in the Japanese style. Simplicity is the key-note here.

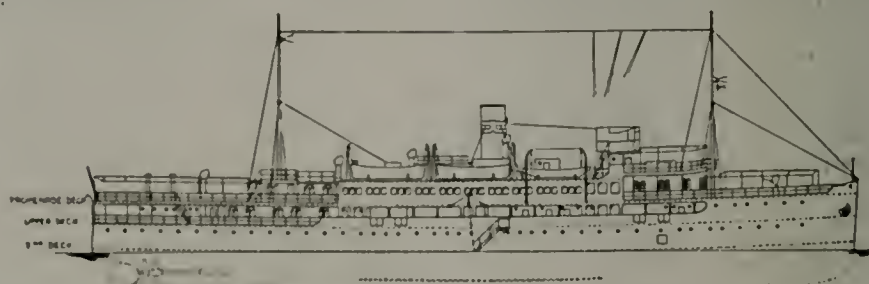
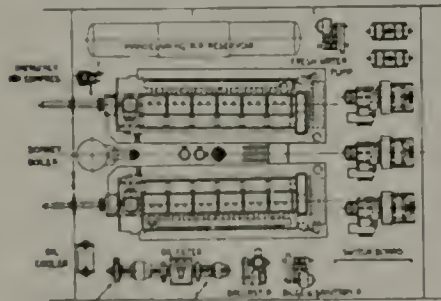
First class accommodations, located on the promenade deck and reached by two main stairways from the main deck, are completely separated from the other classes. These stairways enter on to a main hall, which is also used for smoking and social purposes. This main hall is decorated in Viennese style, panelled in figured linen with overhead lights and electric sconces. Around a fireplace in Italian marble decorated with an oil painting of a Kyoto scene are grouped armchairs and sofas, neatly upholstered in velvet mouquette. Decorative Japanese dwarf trees, used to complete the motif, add greatly to the artistic success.

The dining saloon, which is entered on either side by beveled glass doors, is in French renaissance style, the walls being panelled in oak and maple. The floor is made as parquetted floor and electric wall sconces are fitted. The saloon easily seats thirty-two persons at tables for two or four persons.

The first class cabins, entered from the glass-sheltered decks, form a novel feature and include ten in European style and four in Japanese. The former are fitted with two broad, built-in bunks, which may be used as sofas in the daytime. The Japanese cabins are rep-



Plan and longitudinal and transverse sections showing arrangement of machinery in the engine room.

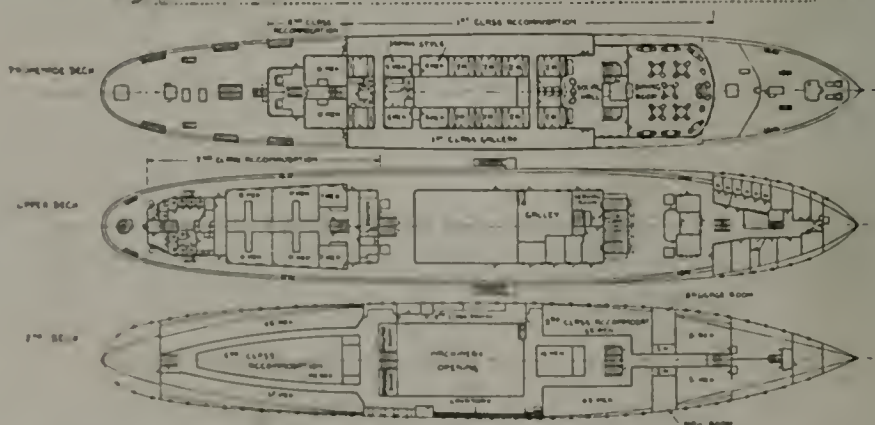


istics of the Kurenaï Maru are:

Gross tonnage	1550
Length over-all	251 ft.
Breadth	38 ft.
Depth molded	19 ft. 6 in.
Mean draught	11 ft. 6 in.
First class passengers	38
Second class passengers	108
Third class passengers	452

Passenger Accommodation

Lavish in arrangement and decoration the passenger accommodations show artistic taste and home-like comfort to a degree very unusual in a coasting vessel of this size.



Outboard profile and deck plans of the Japanese passenger motorship Kurenai Maru

licas of rooms in better class Japanese homes, every detail being worked out in miniature, including sliding doors, windows and mats. The forward deck is used as a promenade for first-class passengers.

Second-class is arranged in Japanese style with mats, and has two large rooms for families. A smoking room in European style, panelled in oak, is for the exclusive use of second class. Third-class throughout is in Japanese style, but with benches and tables for smoking and social use. The larger after-deck is a promenade for the use of these classes. Bathrooms are provided with fresh and salt running water, and lavatories are fitted in white



The motorship Kurenai Maru on her trial trip



One end of the social hall

tile. Electric light is fitted throughout the ship.

The Burmeister & Wain Propelling Machinery

The propelling machinery, which is located amidships, consists of two 6-cylinder single-acting four-stroke reversible diesel engines, built by Burmeister & Wain, Ltd., of Copenhagen, as a special light built type, designed to develop 2300 indicated horsepower at 150 revolutions per minute, and shipped to Japan for installation there. The arrangement of the propelling machinery is indicated on the plans reproduced herewith.

Special care is taken to insure perfect balance and the elimination of vibration in this type of engine is an especial adaptation for passenger vessel service. With the engine developing 2300 indicated horsepower at 150 revolutions per minute, a speed of about 15 knots is attained, but as the owners desire a sea speed

of only 13¾ knots on the 18-hour trip from Kobe to Beppu, the revolutions were reduced. This means that

smaller engines requiring smaller engine rooms would have been satisfactory and so accommodation for a larger number of passengers could have been arranged.

For auxiliary purposes there are three 1-cylinder diesel engines of the Burmeister & Wain's enclosed and forced lubricated auxiliary diesel generator type, the diesel generators being of 33 kilowatt capacity. In conformity with the usual Burmeister & Wain practice the cooling water, forced-lubricating, fuel-oil, ballast, separate bilge and sanitary pumps are all electrically driven.

The steering gear is of the electric hydraulic type of John Eastie & Company's make. The anchors are served by an electric windlass of 30 tons capacity, manufactured by Thomas B. Thrige, Odense, Denmark. This windlass is practically noiseless in operation.



A vista on the enclosed promenade deck

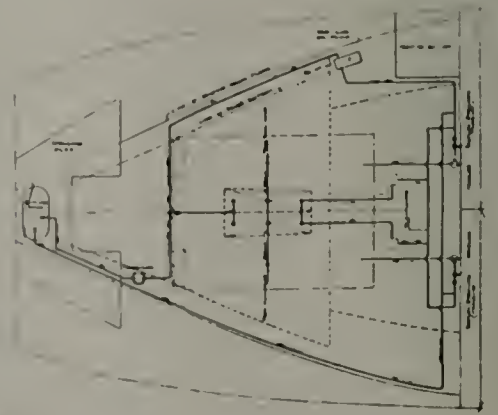
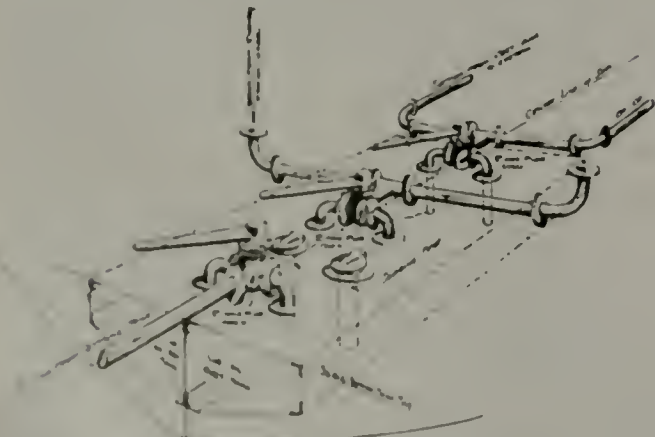
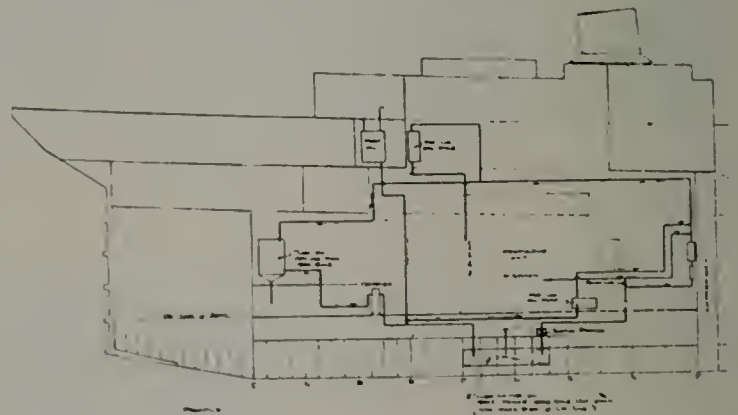
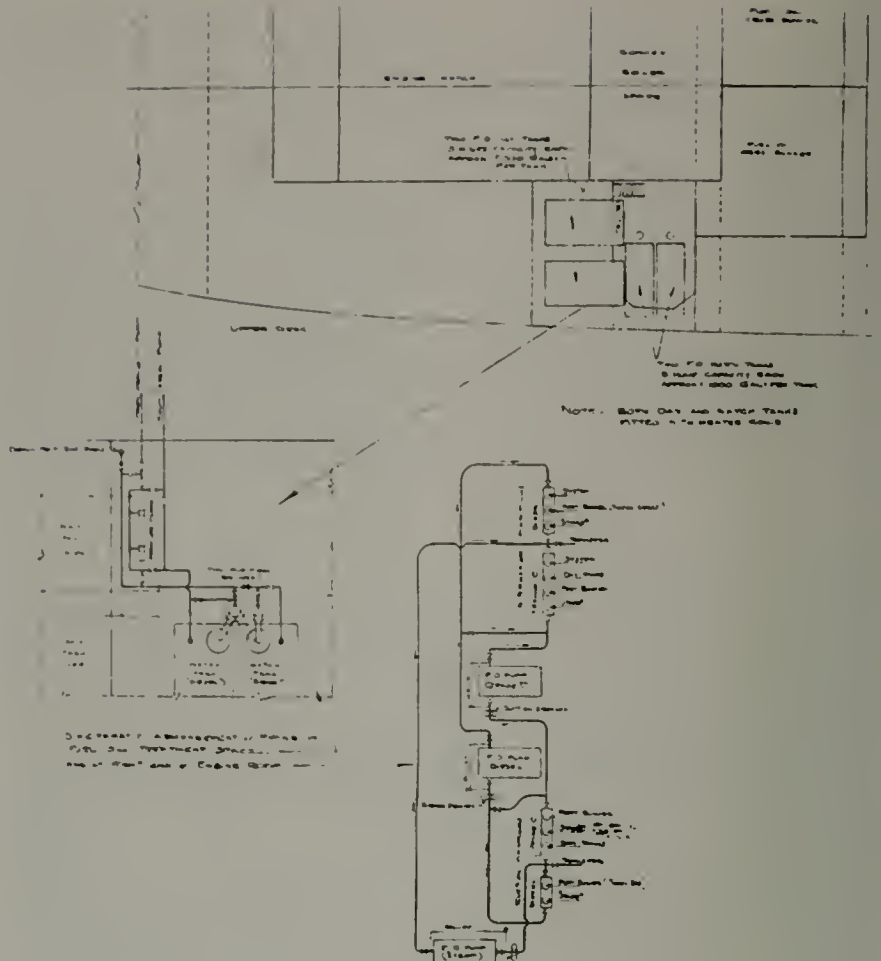
Lubricating and Fuel Oil Systems on Converted Tankers

THE diagrams reproduced on this page show carefully studied out methods adopted by the Standard Oil Company for treating fuel oil and for preserving the purity of lubricating oil on the tankers J. A. Moffett, Jr., and E. T. Bedford, now being converted from steam to diesel drive.

The system for treating the fuel oil is shown in the upper diagram. Two day tanks, each having a capacity of 15 hours' fuel, are equipped with feeder coils and are so shaped that water and sediment in the fuel will drain to the lowest point and can easily be withdrawn. While the motors are being operated with fuel from one day tank, fuel from the bunkers is being passed through a centrifuge into the second day tank. The clean oil from this tank is then used in the motors, while the first tank is being cleaned and filled in its turn with clean oil.

Lubricating Oil Arrangement

The lower diagram and the schematic sketch show the system by which the lubricating oil is kept in good condition. Two rest tanks are located in the double bottom under the engine room floor amidships. These rest tanks are used alternately for a period of 24 hours each. The tank not in use is emptied by a lubricating oil pump into the settling tank located on the dynamo flat. After being allowed to settle, it is passed through a centrifuge back to the emptied rest tank and allowed to rest there for the remainder of the 24 hour period. At the end of 24 hours the suction and discharges are changed from tank to tank through the two-way plug cocks shown in the sketch. This method of treating lubricating oil is a perfection of the batch system and should result in practically perfect lubricating oil conditions.



DIESEL TANKER FOR RIVER SERVICE

DESIGNED for service in the Sacramento and San Joaquin Rivers and their tributaries, a shallow draft, twin-screw motor tanker, is being built for the Union Oil Company of California by the Moore Dry Dock Company at Oakland. This tanker, which is the first diesel type of river craft to be constructed for the Union Oil Company, is scheduled for completion April 28, 1925. It will be the largest propelled river craft under the Union house flag.

The new vessel, constructed on the Isherwood system, will be in accordance with the requirements of the American Bureau of Shipping for the highest rating for river and harbor service.

A draft of 5 feet 6 inches, fully loaded, will make it possible to navigate in the most shallow and remote places along the rivers. A speed of 9 knots an hour against the currents, which are frequent in these rivers, will be provided for.

Her capacity load is 150,000 gallons, carried in 7 separate compartments, port and starboard sides, and an additional capacity of 15 tons for package goods in the forward hold.

The dimensions of the new tanker are: length over-all, 175 feet; beam, moulded, 36 feet; beam over fenders, 37 feet 4½ inches; depth moulded, 7 feet; draft loaded, 5 feet 6 inches.

The motor power equipment consists of two 165 horsepower, 4-cycle Western-Enterprise full diesel engines.

The pumping equipment consists of four Northern rotary pumps, with a capacity of 225 gallons per minute. These are driven by a 4-cylinder 110-horsepower diesel engine. These facilities are capable of discharging the vessel in six hours.

Three single plate rudders are fitted so as to secure quick handling in close quarters and shallow waters.

Navigating and living quarters are located amidships and are raised 7 feet 6 inches from the deck, not only to give clear space but to provide ample room for drum goods and to prevent the living quarters from becoming contaminated with any of the escaping gases while loading or discharging cargo. Special consideration has been given to the living quarters, and these will be finished in hardwood. They are large, well ventilated, and fitted with combination screen doors.

Located two feet above the living quarters is the pilot house, which is finished in teak. It is of the circular front type, fitted with large plate glass windows in order to give the pilot clear vision at all times. Provision is also made for clear vision of the stern of the tanker through a plate glass window. Two fully equipped life boats, 16 feet 6 inches long, are carried, one on the port and one on the starboard side aft.

A WESTERN-ENTERPRISE CONVERSION

THE well known steam yacht Camperno, recently renamed the Imperial by its owner, Willis Walker, San Francisco capitalist and yachtsman, has been dry docked at the Crowley Shipbuilding Company, Oakland, California, for the purpose of converting from steam to diesel power.

This craft, formerly powered with 150 horsepower steam engine, is to be changed to 170 horsepower Western-Enterprise diesel marine engine. It is estimated that a saving of more than 50 per cent in operating cost, and an increase of speed will be effected by this change.

The Imperial is but one of many large yachts in Pacific waters that are contemplating a conversion of this kind, and many installations in new craft have been reported by diesel engine manufacturers. The Puget Sound district, because of the



Willis Walker's motor yacht Imperial, recently changed from steam power by the installation of a 170-horsepower Western-Enterprise diesel engine

particular suitability of diesel engine power for the hundreds of small boats that are there, have been exceptionally responsive in adopting this economical motive power. As the cost of oil for fuel is

rising, a saving of 50 per cent and often times as great as 90 per cent will amount to a worth-while sum over a period of a year to these gas motored boats, quickly returning to the owner and operator the expense of conversion.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

STOCKTON AND THE DELTA

BACK in the early fifties, when California was young, Stockton was on the map as a point where much business was done by boat. In those days the craft were mostly stern wheelers, and even today this kind of vessel plies between Stockton and other river ports. However, the busy workboat has taken nearly all the business of water carrying, as cheap transportation of freight is one of the most necessary factors in the game.

There are several firms operating workboats and barges out of Stockton, and one of the oldest is the Island Transportation Company. This firm operates seventeen workboats and twenty barges. Besides this freighting business they also operate four twin-screw passenger workboats, each engined with two 90 horsepower Sterling engines and developing a speed of 22 miles an hour. These latter are used for express and passenger service between Stockton and the Island or Delta district. This branch of the Island Transportation Company's business is under the name of the Delta Transportation Company, and a large volume of trade is handled by it. Both fleets are under the management of Captain Benjamin Walters, who has been with the company for the past twenty years.

The first vessel operated was the steamer H. E. Wright, and for considerable time she did well, but was



The steamer dock at Stockton, California, showing the bay and river stern-wheel steamer J. D. Peters and a number of workboats

superseded by the more economically operated gas boat, which in turn is rapidly giving way to the diesel-driven craft. The management contemplates several new vessels in the near future, and they will all be diesel-driven.

Another well-known firm operates eight workboats and many large sized barges. This company is the Colberg Motor Boats, and is managed by L. E. Moore. This gentleman speaks very highly of the diesel engine, believing it to be ideal for the trade carried on by his firm. Their vessels are used mostly in the Island district and also between Sacramento, San Francisco, and Stock-

ton. Both passenger and freight business is looked after, and the volume of work done totals large.

Besides these there is the Wheeler Transportation Company, which handles freight only. They have a number of heavy barges and workboats mostly engaged in the local trade between the delta islands and Stockton.

Larger craft also enter Stockton. One of them, the J. D. Peters, stern-wheel steamer, is illustrated here. Several similar vessels are in the trade, but as they are not real workboats, only a passing notice is given them. In the picture will be seen several typical small boats, and the general features of the port of Stockton are well shown. Nearly all the brick factories and other industries have their water track to the doors, and barges towed by the workboats are very much in evidence.

As like all things mundane, the workboat in time wears out and it becomes necessary to have a place to build new and repair old ones. The principal establishment for this sort of business in Stockton is the one known as the William Colberg Yard. It is located at West Lindsay and Stockton Streets, and occupies a full block. It is managed and directed by Mr. Colberg, and has in the past turned out many notable self-propelled craft, as well as numbers of large and small barges. There is a fine marine railway connected with this yard, as well as a complete machine shop. All repairs on work or larger boats can be done,



THE DELTA

Our illustration shows a barge loading potatoes at a delta landing on the lower San Joaquin River. There are over thirty islands in this delta, ranging in size from 1000 to 23,000 acres, with about 400 miles of navigable waterways.

The land in this delta is exceedingly productive. Many world's records in vegetable production have been made here. It is stated on good authority that 15 per cent of the entire production of vegetables of the United States comes from this region. Hundreds of thousands of tons of produce are handled by Sacramento and San Joaquin River craft each year.



A typical scene on the lower Sacramento River

and Mr. Colberg's reputation is of the highest as regards excellence of the finished job.

Besides the usual run of repair work, there are at present under construction two large freight boats, 175 feet in length by 40 feet beam. These will be engined by twin die-

sels. However, when completed these sturdy freighters will be a notable addition to Stockton's rapidly growing inland water fleet. The steady increase of cultivated acreage in the San Joaquin Valley is sure to bring more and more workboats into existence, and if it were not for

these same cheaply operated craft, acreage would not be of much profit. So the analogy between workboats and prosperity on the San Joaquin River is obvious. Chances are that friend Colberg's yard will be kept busy for a long time to come.

OIL PURIFIERS FOR WORKBOATS

THE application of De Laval oil purifiers to the lubricating systems of steam and diesel engines is not new. However, it is only recently that workboat operators have given the matter of oil conservation much attention. The continual mounting costs of oil, fuel, and labor have made necessary closest economy to successfully keep a fleet or individual boat running, with the balance on the right side of the ledger. In European countries the purifying of diesel engine lubricating oil has reached a high point of perfection, and nearly every vessel so fitted has the De Laval system. Eastern Coast operators are also waking up to the need of saving lubricating oil, and already a number of workboat operators on the Pacific Coast are taking the matter up.

Knowing this, and wishing to keep our marine folks well informed of such things, a Pacific Marine Review representative visited the San Francisco agency of the De Laval products with a view to getting the latest information as to the types suitable for the regular workboat. John V. Shepard, manager, took considerable pains to explain the operation and application of the different sets of purifiers manufactured by his firm. It appears that the Type 300, with a capacity to handle from 30 to 100 gallons of oil per hour, is a favorite with those using them. This machine can be operated by a

motor using the low voltage generally carried on motorboats, or the standard 110 volts if desired. It can also be driven by a small gas engine, or even by a belt from the main shaft of the vessel. As the purifier is practically automatic in its work, and will take care of almost any sort of oil that is even fairly fluid, its range of usefulness is at once apparent.

Workboat operators well know the high costs of lubricating oil for diesels, but with an installation of a De Laval purifier this cost can be most materially reduced, so much so that the interest on the outlay runs into figures that would satisfy the hardest loan-shark. In fact, the original investment will be paid back with interest in a very short time of running. Mr. Shepard will at any time give all data regarding these savings, as well as a great deal of other valuable information on lubrication systems.

De Laval builds also a purifier of small capacity known as No. 200. This will take care of from 8 to 30 gallons of oil per hour, and can be operated with the same choice of motive power indicated for No. 300. The simplicity of the mechanism is remarkable, and when an unmechanical farmer can operate his cream separator for years without repairs or adjustments, a diesel engineer should call it a snap to keep an oil purifier up to the mark. The cream separator and the oil purifier

work on the same fundamental principle, and both are simple.

RADIO EQUIPMENT (Continued from page 123)

The President meets incoming liners at the Port of New York, generally going out to quarantine. The mail is transferred to the smaller boat and many hours are saved in the delivery. Sometimes when ships are delayed by fog beyond quarantine the mailboat makes longer trips and prevents delays which would be unavoidable if the mail were held until the docking of the liner.

The new 200 watt tube transmitter will have a range and effectiveness equal to the 1 kilowatt spark set which it will replace.

DIESEL DRIVE VERSUS ELECTRIC

WHILE the writer of this article believes that a diesel-driven generator, with electric motor drive is an ideal rig for propelling a workboat, he is always ready to quote the other fellow's side of the question. In conversation the other day with an engineer of world-known reputation as a designer and builder of diesels, that gentleman strongly opposed the electric drive for any class of vessel and as strongly contended that the direct drive was the thing.

(Continued on page 133)

THE WALLENROD FLEET

THE late Captain George Wallenrod was early in the field as a workboat operator and owner. He was also the pioneer in the diesel power for this type of craft. The first workboat on San Francisco Bay to be fitted with diesels was the Minnie W. This vessel was engined with a 100 horsepower diesel by the Enterprise Engine Company, San Francisco. From the start she did well and made some phenomenally long runs, at one period being operated practically continuously for 600 hours. She was later followed by two more, one with 100 and the other with 125 horsepower Enterprise diesels.

Like others in this business, Captain Wallenrod began in a small way, his first workboat being the usual type of craft with gas engine power. Business increased and more tugs were added, until now eight are continuously in service, besides a number of barges and scows, running from 200 to 650 tons each, while larger ones are soon to be built.

The headquarters of the tug and launch company are at the entrance of China Basin, on Channel street, San Francisco. At this time the management is in the hands of William C. Waack, who, so far as our records show, has the distinction of being the youngest manager of a workboat company in the world. Mr. Waack was born on the shores of China Basin, at one time the main headquarters of the workboat industry on the San Francisco Bay. After attending the public schools, he entered a machine shop to learn that trade. Was employed on the first diesel engines manufactured in



WILLIAM C. WAACK

Mr. Waack, the capable manager of the George Wallenrod fleet of tugs, lighters, and barges, is said to be the youngest of the world's tugboat managers.

San Francisco and has, in fact, grown up in the business of workboat engines. His father was an old-time handler of bay craft, and operated some of the first of the sailing type, of which there are few left.

Young Waack was in his youth an

ardent lover of the bay and as he grew older entered into the workboat game with Captain Wallenrod, under whose able teaching Mr. Waack quickly became an expert. At the time of Captain Wallenrod's death the young man was made manager of the business, and under his management it has steadily increased. During the World War Mr. Waack served as chief machinist in the United States Navy, being discharged at the close of the war with honor.

Discussing the diesel engine for workboats he believes that a direct reversible diesel will ultimately be developed that will handle as easily as a triple expansion steam engine.

Speaking of some of the kinds of work done by the workboats and barges, Mr. Waack mentioned that his company is now freighting to the new bridge across Carquinez Straits girders averaging 28 tons each. That units of this kind are somewhat hard to negotiate goes without saying. Heavy cargoes of



Two of George Wallenrod's tugs in action on San Francisco Bay



The Vera running out of China Basin. Mission Rock in the background

grain on barges, weighing over 2000 tons are handled. To show the awkwardness of such a load, it might be mentioned that when one of these grain barges gets into the wash of a ferryboat it will bend with the wash like a snake. When an unwieldy heavy barge of this sort is towed and docked by a workboat, operated by one man, it requires judgment and skill to do the job without accident. And the small number of such accidents shows that the San Francisco Bay workboat operator is an expert.

NEW TOWBOAT PABCO

THE new workboat Pabco, the latest addition to the fleet of the Berkeley Transportation Company, is perhaps one of the very best built and fitted out of any on San Francisco Bay. Her hull, which is 50 feet over-all length, with a beam of 13 feet, and depth of 6 feet, was built by William Cryer at his Oakland yard. The engines were built by the Atlas Imperial Engine Company, and are of the full diesel type, developing well over 75 horsepower with no fuss or trouble. Both the machinery and hull were turned out under somewhat different conditions than those usually maintained. The owner, John M. Atthowe, gave orders to both hull and engine builders to make a good first-class job in every way, without restriction as to a contract price.

As both firms are of repute, the resulting workboat is one to be proud of. Everything has been provided which experience and modern practice have shown necessary. Since her first day's run she has never been out of commission due to defect of construction, and is daily towing and doing regular bay service without a hitch. That liberality pays in such a matter has been fully proved, and the owner, Mr. Atthowe, is enthusiastic over the performance of the Pabco, as will be noted by his letter to the editor of the *Pacific Marine Review*, which appears in this issue.

While writing about the good job made of the Pabco, the workboat editor takes the opportunity of saying a word about Mr. Atthowe, who is the Berkeley Transportation Company. This gentleman has for nearly all his life been connected with bay and river navigation, and has been active in the operation of bay transportation as applied to the freighting business in all its branches. After thoroughly mastering the details of the work, he associated himself with the Berkeley Transportation Company, some ten years ago, taking the position of manager, which he filled for four years and then bought out the partners, assuming complete ownership six years ago.

While still a young man, Mr. Atthowe had taken a most active part in the development business in Oakland and Berkeley as regards transportation of manufactured products from that district to San Francisco by water. He is an active Rotarian



A remarkable picture of the new tugboat Pabco under construction in the boat shed at Wm. Cryer's yard, Oakland, California. Note the sturdy construction which is typical of San Francisco Bay workboats. The Pabco has recently been added to the fleet of the Berkeley Transportation Company. Pabco is the trade-name of products of The Paraffine Companies, Inc., which form a large part of the freight handled by the Berkeley Transportation Company.

and boosts in every way the increase of San Francisco Bay business along the lines of manufacture and trade, believing that what is good for the East Bay cities will also materially benefit San Francisco. His fleet now consists of three tugs and seven barges. The Pabco, the latest, was built and engineered to follow in a way the plans of the smaller boat Mission Rock, a 40-foot vessel equipped with an Atlas-Imperial engine, which gave such splendid service that naturally the new one has the same make and type, though powered with a more powerful diesel.

A volume of business averaging some 10,000 tons per month is now being handled by the Berkeley Transportation Company, and is steadily increasing, which shows the growth of Transbay industry. The San Francisco headquarters are at Pier 9 and the freight cargoes are carried to various bay points, principally to the east shore.

The pleasing personality and careful business control of Mr. Atthowe is the secret of this success, and it shows that these two factors are of vital importance in the control of a workboat fleet as well as in any other line of endeavor. Knowing the city well, having been born here, Mr. Atthowe is familiar with all the

phases of freight handling as carried on along the waterfronts of San Francisco Bay. He believes in having the best in the way of men and material, and his fleet and business office are manned by efficient employes who are at the same time his best friends.

(Continued from page 131)

He also contends that the claim of exceedingly great ease in the matter of maneuvering motor-driven propellers has been stressed too much. A system of control for diesels can, he says, be devised that will permit of them being started, slowed, stopped, driven to fullest power, and reversed, and this control can be located at various points on the ship as well as in the pilot house.

As the gentleman quoted has probably put in action several thousands of steam and internal combustion engine driven plants, his knowledge of the subject is unquestioned. However, there are many who differ from his ideas, and it is this difference in opinions that tends to sharpen the wits and inventive faculties of designers, the survival of the fittest being the ultimate decision. So come on in, you exponents of electric drive. Let's hear your side!

Union Heavy Oil Engine

WHEN an old-timer thinks of an internal combustion engine he generally thinks of the name "Union." This is but natural, as the Union Gas Engine Company, Oakland, California, was from the first identified with that type of machine. Primarily this firm confined itself to gas engines, but later started building diesels, and these latter, like the old product, have been designed and constructed along the same lines of sturdiness and efficiency. Already they have built many installations for workboats, and in every instance the machines have come up to their reputation.

Looking through the shop at Oakland the other day a Pacific Marine Review representative noted some points of excellence worthy of attention. One in particular struck the eye of the engineer as admirable. That is the arrangement of overhead cam-shaft. This does away with the long push rods and permits of very easy adjustments of the solid injection valves in the matter of lift.

While the idea is not new, it is here well worked out. Also the long skirted pistons as provided in the Union engine are a good feature. The wrist-pin being placed in the center of length relieves the sliding parts from any severe angular strains. The long skirt too, serves to carry the oil stopping rings well down where they are needed. The governing control is also very positive and simple, handling both the fuel supply and the air inlet. From full power to no load is hardly noticeable in speed change, this being handled positively and closely.

Taken as a whole the Union diesel compares with the best in the field, and as this field promises to extend materially, no doubt this firm will build many more units. At present the sizes turned out are from 75 horsepower, weighing about 13,500 pounds, to 400 horsepower, weighing 66,500 pounds. They are built "right and left" for twin-screw installation as well.



CLOVERLEAFS IN ACTION

The illustration shows the Alaska Salmon Packers' bark McLaurin being towed to an offing on the Bering Sea by three gas tugs equipped with Cloverleaf propellers. The picture was taken from the deck of the Frank and Lena, powered with a 45-horsepower Atlas. On the left is the Twilight, with a 40-horsepower Standard and at the right the Sans Nom, with a 10-horsepower Acme. The fleet is in command of Commodore Joe Hidzick of the Alaska Salmon Company.

An Enterprising Operator

THE business of operating workboats around San Francisco Bay and tributaries has brought into existence many firms. A number of these started with a few boats and have worked up to quite respectable sized fleets. Not the least important among them is the firm of Osborn & Bornholdt, 5668 Broadway, Oakland. This company started in the workboat business five

years ago with one vessel, and have added a boat a year ever since, now operating three tugs and two freighters.

One of the tugs, the Rover, has recently been fitted with a 125-horsepower Enterprise diesel engine and is doing splendid work. The Rover was built in Hilo, Hawaii, and originally had steam power. Roy J. Osborn, senior member of the firm, is

an ardent diesel fan, knowing well the advantages of that power for boats of the kind he is operating. The firm has recently acquired the steam trawler, U. S. Grant, and will take out her present engines and boilers and install a diesel engine. The achievement of Osborn & Bornholdt in growing from a small beginning to the operators of a fleet of five boats in as many years shows to what an extent the growth of workboat operation has advanced around San Francisco Bay and tributaries.



Frequently Pacific Coast boat builders are called upon to lengthen existing wooden hulls. Our two pictures show this operation being performed on the bay and river steamer Dauntless at the Hunter's Point Yard of Anderson & Seimer.

LUBRICATION ON SHIPBOARD

An Open Forum—Questions on Lubrication Problems Are Invited; They Will Be Answered in Order of Receipt Through the Co-operation of the Associated Oil Company's Staff of Lubrication Engineers

INSTALLMENT No. 9

Question No. 41.—What is meant by the physical properties of lubricating oil and what are they and how is this information obtained?

Answer.—The physical properties of an oil are its general characteristics, such as:

Gravity	Viscosity
Flash	Color
Fire	Emulsion Test
Cold Test	Acidity

Taken in the order given, the gravity of the oil or its specific gravity is its weight in relation to an equal body of fresh water. Gravity has little or no bearing upon the lubricating ability and is of small importance to the purchaser.

Flash.—Flash point is the lowest temperature, Fahrenheit, at which inflammable gases are generated from the body of the oil under test. The oil is placed in a shallow copper dish and heat is applied to the underside of the dish. By watching the thermometer, which is suspended in the oil, and by passing a small flame over the surface of the oil while it is being heated, small puffs of gas are ignited or flashed and the reading on the thermometer indicated at this point is called the flash point of the oil.

Fire.—By continuing to raise the temperature of the oil slowly, the entire surface of the exposed oil will burst into flame from contact with the small flame before mentioned. This temperature is called the fire point of the oil.

Cold Test.—The cold test is the temperature Fahrenheit at which the oil ceases to flow and begins to solidify, and is of great importance to purchasers when the oil in use is exposed to low temperatures such as crankcase lubrication in automobiles, etc.

Viscosity.—Viscosity is the most important physical property to be considered by the purchaser. Viscosity is commonly known as body or weight. Technically speaking, viscosity is the measure of its resistance to flow. Viscosity is the combination of cohesion and adhesion, cohesion being the ability of the structure of the oil to hold or stick together, adhesion being the tendency of the oil to adhere to frictional surfaces. The viscosity test is conducted by means of the piece of laboratory equipment known as the viscosimeter, which in the case of lubricating oil is generally known in the United States as the Saybolt Standard Universal.

Oil under test is introduced into a copper container holding about 100 C.C. This container or cylinder is provided at the bottom with a standard size orifice which drains into a glass graduated flask. The above mentioned copper container holding the oil under test is immersed in a surrounding bath of either oil or water, which is mechanically heated. A Fahrenheit thermometer is suspended in the oil under test and a temperature of 100 degrees Fahrenheit is maintained throughout the test if the viscosity desired is to be taken at 100 degrees Fahrenheit. In the event that a 212 viscosity is desired, then the temperature of the oil is raised to 212 degrees Fahrenheit. A cork is generally placed in the bottom of the tube attached to a string and when the test is ready to start, the cork is removed by pulling the string, and, with a stop watch, the time consumed in filling the graduated flask to the 60 C.C. mark is carefully noted. The lapse of time in seconds is known as the viscosity of the oil. In other words, if it takes 100 seconds to fill the graduated container to the 60 C.C. mark at 100 degrees Fahrenheit, then the viscosity of the oil would be noted as 100 viscosity at 100 degrees Fahrenheit.

Color.—The color is determined by comparing it with known color standards such as the N. P. A., Lovibond, or

other universal standards. The colors of oil are generally noted in figures, and light colored oils have small numbers to indicate their hue and the heavy dark oils have the larger numbers.

Emulsion Test.—This test is to determine the ability of the oil in question to separate from pure water or salt water or a caustic soda solution. For steam turbine lubrication, the emulsion test is of great importance, as all engineers know the annoyance and danger attendant upon the use of an oil which forms a permanent emulsion.

If the oil will not rapidly and completely separate, it is unsuitable for use as a steam turbine lubricant. The United States Government Class "C" test calls for complete separation in thirty minutes from standard solutions composed of

1. Distilled Water.
2. 1 per cent Salt Solution.
3. Normal Caustic Soda Solution.

Acidity.—The United States Government Class "C" requirements are that not more than 0.05 milligrams of potassium hydroxide shall be required to neutralize one gram of the oil.

Question No. 42.—Why does lubricating oil form such hard scale on exhaust valve and piston heads of diesel engines?

Answer.—Lubricating oil is blamed for the formation of all carbon in internal combustion engines, whereas the greater majority of such carbon comes from the combustion of your fuel and not from the lubricating oil. Please consider for a moment the amount of fuel oil which passes into cylinders each hour. This fuel is vaporized and burned and passed out through your exhaust valves and pipes. You do not lay the internal condition of your exhaust pipes to the lubricating oil. You know that the carbon and soot deposits found there are the products of incomplete combustion and the interior of your cylinders have about the same condition to contend with as your exhaust pipe does.

Fuel oil contains various complex compounds, which when burned and expanded in your cylinders to liberate the latent heat and provide energy, also produce and leave behind solid or incombustible matter. The scale on exhaust valves certainly cannot be charged up entirely to lubricating oil. Enough lubricating oil is not burned to produce much, if any, troublesome carbon.

During the process of refining and before the oil reaches the engineer for application to cylinders of diesel engines, the product has gone through many processes and is refined, cleaned, and purified and undergoes a complete change.

It is not the purpose of this article to state that lubricating oil produces no carbon, for such a statement would most certainly be untrue, but we do wish to make clear the fact that lubricating oil should not carry the entire blame. Different brands and grades of lubricating oil produce varying amounts of carbon and also carbon of different natures. Some carbon is hard and resists scrapers, and chipping with a cold chisel is about the only method of its removal. Other carbons can be scraped off with a putty knife and are soft and fluffy.

This will answer your question regarding the hardness of scale. In comparing oils to other commodities, let us cite the following facts which will go to prove our contention:

The residue from burning paper is soft and fluffy. Wood produces a harder and more solid residue, and a poor grade of lignite bituminous coal leaves the hard glass-like clinkers which cause so much trouble under marine boilers.

If the reader should not agree to the statements made here, constructive criticism is invited.

AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

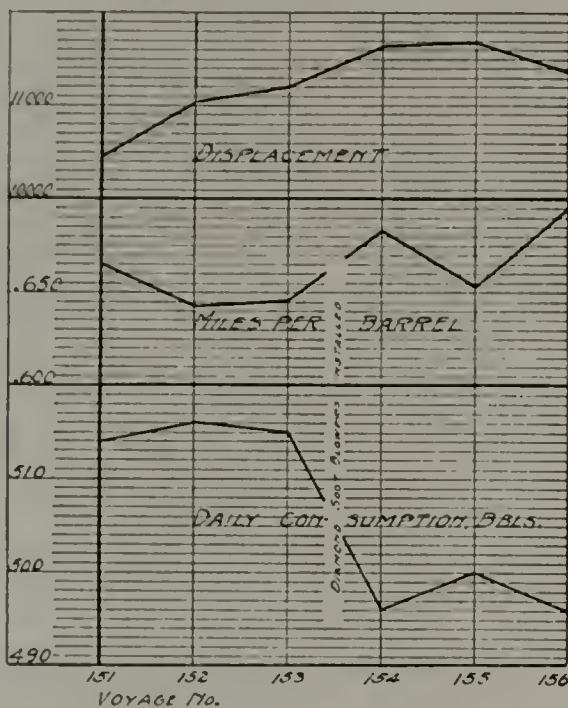
CLEANING TUBES SAVES FUEL

FUEL cost is one of the greatest, if not the greatest, single factor in modern marine transportation costs. It is the urgency of this factor which is so potent at the present time attracting the attention of marine operators the world over to the marine engine.

The uniform application of the diesel engine is only hampered by the first cost of diesel engine installations. For that reason operators of steamships should direct their attention very energetically to the saving of fuel costs with their present installations.

One of the universal causes of waste of fuel in steam boilers is soot, which, by covering the heating surface of the boiler with carbon, prevents the transmission of heat to the water and steam on the other side of that heating surface. The waste of fuel due to this cause usually runs into hundreds of thousands of barrels of fuel oil and hundreds of thousands of tons of coal each year, both to shipowners and to industrial plants. The loss to shipowners is greater in proportion, because by the proper use of mechanical soot blowers shipowners cannot only save fuel but they can effect a material increase in the total cargo capacity of their ocean-going freighters. This is

VOYAGE CHART
"S. S. WILHELMINA"
Matson Navigation Co.



The above chart covering three voyages of the S. S. Wilhelmina before the installation of Diamond Soot Blowers, and three voyages after their installation, shows displacement in tons, miles steamed per barrel, and the daily fuel oil consumption in barrels.

graphically illustrated by the diagram reproduced herewith, which indicates the saving effected on the well-known Matson Navigation Company steamer Wilhelmina by the installation of Diamond soot blowers. The diagram shows the displacement curve, the miles per barrel, and the daily consumption of fuel in barrels of three voyages of this vessel before the installation of the

Diamond soot blowers, and three voyages after the installation.

The steamer Wilhelmina is on the San Francisco-Honolulu run, carrying passengers and freight. Certainly the savings indicated here are of an order which would justify a far greater outlay of capital than is involved in the installation of soot blowers on any battery of marine boilers.

The Diamond Power Specialty Corporation, manufacturers of Diamond soot blowers, have recently issued a very interesting pamphlet discussing the subject of "Increasing Marine Profits." Every operating official should have one of these books. They will be mailed free of charge on application either to the Diamond Power Specialty Corporation, New York, or the Western Engineering Company, San Francisco, Pacific Coast representatives.

ELECTRIC HAND SAW

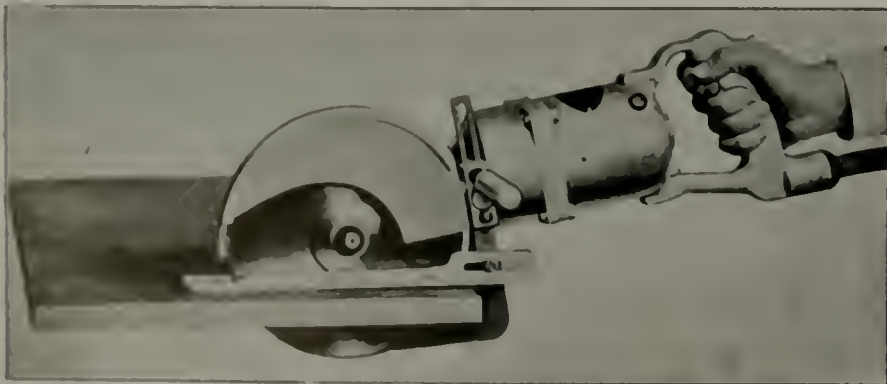
THE last few years have seen the introduction into building work of a great number of portable electric tools, such as drills, hammers, grinders, screw drivers. Now comes a really portable electric saw to replace the slow and tiresome method that carpenters have long had to contend with.

The Skilsaw, as it is called, is in extensive use by general contractors for ripping and cut-off work in 1-inch and 2-inch lumber. Both ripping and cross-cutting are done with the same blade.

It also has a wide variety of applications in the industrial field. It is being used in factories and manufacturing plants for general maintenance, repairs, construction and also in the shipping room.

The light weight of this tool combined with the surprising amount of power has made it very handy and accessible for all kinds of cutting. Besides wood, Skilsaw also cuts many building and insulating materials, such as transite, bakelite, fibre, plymetl, etc.

Skilsaw is manufactured by the Michel Electric Hand Saw Company, 166 East Grand avenue, Chicago. These people have published a very interesting folder, which they will be pleased to furnish upon request.



The Skilsaw, an electrical hand sawing machine

The Use of Marine Glue in Deck Seams

By L. HERRING, of the firm of L. W. Ferdinand & Company

SUCCESSFUL results with marine glue are not dependent upon any art or science. Any careful workman with a little care can obtain results which are equal to the best. However, a few words of caution or a few points of advice to the beginners may add assurance which often helps in the results.

A heavy kettle or melting pot is best, as it heats the marine glue more evenly and does not allow it to burn in one spot before it is thoroughly melted. This melting pot should be placed near the point of use, so as not to cool the melted glue by carrying it too far.

Break the marine glue out of the box in which it was received and put some in the pot. Do not melt more than you require for immediate use. As marine glue is used from the kettle, more should be added. The heat taken in melting this new glue keeps the rest from burning. Keep a moderate fire and melt the marine glue until it becomes entirely fluid, stirring frequently to prevent burning.

When entirely melted and ready for use, the marine glue will drip from the stirring paddle very much like oil with slight stringing. It should then be used as soon as possible. Do not allow the marine glue to boil. Boiling causes brittleness and is one of the commonest causes of trouble.

The seam must be caulked in the usual manner. The oakum should be well down in the seam, allowing about three-quarters of an inch above the caulking for the marine glue. If the seam has previously contained pitch or composition or any material other than marine glue, the old material should be thoroughly clean out and a rase knife used to clear the seam.

The work of paying seams should be done under cover whenever possible, as any moisture in the seam will be a source of trouble.

For running marine glue into the seam or paying (as it is called), a paying shell, or ladle, is used. The paying shell is filled from the melting pot and from it the marine glue is poured into the seam, with the nose of the paying shell an inch from the deck. In this operation the workmen should walk backwards paying from him as he walks. If the nose of the ladle is held too

close to the seam a quantity of air may be enveloped which cannot escape before the marine glue is set. This will cause air bubbles to appear in hot weather, leaving the seam hollow and unsound.

Best results are obtained by first paying a small quantity of marine glue into the bottom of the seam, going over it a second time to complete the filling.

Allow the marine glue to slightly overflow the seam and, if possible, permit this excess to remain on the deck for several days (weeks are better if done in cold weather). This time is required to allow the marine glue to settle into place, filling every small cavity.

The excess of marine glue is re-

moved from the deck with a scraper. The scraper will leave a rough surface on the marine glue, but a few warm days will make it smooth. In warm weather scraping is most easily done in the cool of the morning; sometimes applying water to the deck while scraping may help.

With the average yacht deck, a pound of marine glue will pay about 30 feet of seam. The length of life of a good marine glue in a deck depends of course upon the service it receives, but there are many instances where the glue has been known to last 10 or 12 years and in some cases even as long as 20 years.

This article has treated only with marine glue for deck seams. It should be said in passing, however, that this material in its various forms is finding a great variety of uses in the marine field.

Witt Pressure Regulators

WITT'S No. 10 diaphragm type steam pump governor or pressure regulator is constructed with a double-seated balance valve directly connected to a diaphragm. The pressure to be controlled is admitted above the diaphragm, which is resisted by an enclosed adjustable spring.

It is suitable for controlling discharge pressures (either oil or water) up to 200 pounds. It is recommended in preference to a single seat type governor where the steam pressure or load on the pump is subject to wide variations. It gradually opens increasing the speed of the pump without jar, operating either fuel oil pumps or boiler feed water pumps at an even speed. It holds a steady pressure on the discharge of the pumps which is especially desirable for fuel oil pumps pumping oil to burners, giving a steady pressure to the burner. This is necessary in order to obtain a uniform fire whether the burner is under hand control or operated by an automatic device. It is also very desirable to hold a steady uniform pressure on the discharge of boiler feed water pumps in order to get a uniform feed into the boiler whether operated by hand regulation or automatic device.



The balance valve makes this regulator especially suitable for fire, fuel oil, and boiler feed pumps on ship board. Many are employed on Pacific Ocean steamers. It prolongs the life of the pump and insures uniform, reliable service.

The Witt line of pressure regulators includes many other types. One of the most interesting is the No. 11 piston type steam pump governor or pressure regulator, which comprises

a double seat or balanced valve, directly connected to a piston chamber, fitted with a cup leather, the pressure being controlled is admitted into the piston chamber which is resisted by an encased spring which controls the operation of the pump on which it is installed by the slightest variation of pressure in the discharge line from the pump, thereby running the pump at a uniform speed, operating it just fast enough to perform the service required. This regulator is specially adapted for high pressure where it is desirable to operate on a pressure up to and not over 500 pounds on the discharge of the pump. The same type is manufactured also in dimensions to take care of pressures from 800 to 1000 pounds.

Adoption of Ground Cylinders for P-Type Air Compressors

IN the early days of the automobile, cylinders were bored in the regular way, making the cut as smooth as possible, which was in keeping with the standard practice for such work on larger size cylinders. But the automobile engine being a delicate piece of mechanism and placed in the hands of inexperienced operatives, it was viewed as desirable to take more care with all parts, especially the finish of the cylinder bore, so various tools or devices were devised for the purpose of making the finish as smooth and true as possible.

However, in all of these operations more or less heat was generated, affecting the internal strains of the casting, so when it cooled off it would distort slightly, leaving the bore of the cylinder in most cases out of true, both longitudinally and cross-wise. Considerable effort was expended on these devices, and in the end it was agreed that grinding was the only solution of the problem, because with a grinder very little material is removed per stroke or revolution of the wheel; therefore, heating in this operation is nil, re-

sulting in the cylinder being almost perfectly round and straight when the grinding operation is completed.

For some time only a few of the better makers of automobiles adopted the grinding method of finishing the cylinder bores, but now about 80 to 90 per cent of them finish their cylinder bores by grinding.

The grinding of compressor cylinders today is about as rare as the grinding of automobile cylinders in the beginning of the manufacture of that machine. But in keeping with the pioneering spirit, the Chicago Pneumatic Tool Company has standardized on the ground finish of the cylinder bores on all of its portable compressors, on account of which the volumetric, as well as the mechanical efficiency is improved.

It is true that it is possible to get a reasonably perfect cylinder from the old method. However, we are convinced that when a compressor cylinder is finished by the grinding method as employed by the Chicago Pneumatic Tool Company, it is about the last word in the performance of such an operation.

illustrating their Improved Paracoil Feed Water Heater.

This improved Paracoil feed water heater has some features not enjoyed by any other feed water heater on the market in that the coil surface is so compactly arranged that it occupies small space and the shell is constructed of cast iron instead of the old steel shell type; however, due to the smaller size of the heater the total weight is less than the old type. The heater also is arranged for easy accessibility for repair. These three features alone should make the improved Paracoil feed water heater of special interest to steamship men.

* * *

The Hickman Air Separator, Bulletin No. 2, has been issued by the Western Engineering Company, 215 Market street, San Francisco.

This bulletin describes the nozzle type Hickman air separator, illustrated with diagrammatic sketches and charts, also photographs of various steamships, locomotives and office buildings in which the Hickman air separator has been installed. Bulletin No. 2 will be sent to anyone on request.

* * *

The Winton Engine Works, 2116 West 106th street, Cleveland, Ohio, has issued an interesting booklet entitled, *Commercial Vessels Powered with Winton Engines*. This booklet contains large photographic reproductions of eight vessels powered with Winton engines, describing the main and auxiliary power plants of each. * * *

General Electric Company, Schenectady, N. Y., has recently issued Bulletin No. 48941A, entitled, *Cr-9006 Enameled Resister Units*. This is a well illustrated booklet describing the uses and advantages of these units and giving standard ratings and dimensions. Applications are given for several different fields of service. The bulletin contains 18 reading pages.

* * *

The Griscom-Russell Co. has just published a new information leaflet describing the well-known G-R instantaneous heater for supplying hot water for boiler feed, heating systems, industrial processes, etc. This leaflet concisely outlines the applications, special advantages, and construction specifications of the heater and includes a complete table of sizes, capacities, and dimensions.

Copies may be obtained by writing direct to the manufacturer, The Griscom-Russell Co., 90 West street, New York City.

Book Reviews

Marine Engineering Practice, by Engineer-Commander F. J. Drover, Royal Navy. 494 pages, 250 illustrations, including many plates; bound in blue cloth with gold stampings; published by D. Van Nostrand Company, 8 Warren Street, New York; price \$6.50.

This volume is a "manual on the design, construction, operation, and maintenance of the engineering equipment of ships." It covers eight main topics, namely: Marine Boilers, Oil Fuel Burning; Reciprocating Marine Engines; Marine Turbines; Marine Condensers and Air Pumps; Marine Auxiliaries; Diesel and Semi-Diesel Engines; and Adjustments and Repairs. Obviously, each one of these topics if treated separately in exhaustive detail might occupy many volumes of the size of the one under review. The value of *Marine Engineering Practice*, as treated by Drover lies in the fact that the book describes, in a very concrete and exhaustive manner, the best accepted conservative practice of machinery and apparatus at the present time in use, and it is therefore a book which should

be highly valuable to ship operators and to engineers specializing in any particular branch of marine engineering. In fact, it gives them a fairly comprehensive and practical picture of all of the component parts entering into the complicated machinery plant of the modern steamship or motorship.

* * *

The Middle Passage, by Daniel Chase. 273 pages, bound in green cloth, published by The MacMillan Company, New York. Price \$2.

This story of a New England seaport and the fate of the Jardines has all the flavor of the days of clipper ships and the China trade. It follows the love story of a master of the ship Juno and the many disastrous events through which the hero and ship pass, together with a wealth of picturesque detail that makes both the scenes and the characters most convincing.

* * *

TRADE LITERATURE

Davis Engineering Corporation, 90 West street, New York, has issued Specification B-5, describing and il-

NOTES ON LEGISLATION AND SHIPPING

Special Correspondence from Washington and New York

LEGISLATION of interest to shipping escaped to some extent the avalanche of public measures poured in upon the Senate during the final days of Congress. The Senate ratified the German treaty, intended by the State Department to serve as a model for treaties to be negotiated with other countries, reserving, however, the right to enact preferential legislation in favor of American shipping. The Senate passed the home port bill, virtually assuring the enactment of that measure before the expiration of Congress. The Senate also passed without change the House bill authorizing suits against the United States in admiralty for damage caused by and salvage services rendered to public vessels belonging to the United States. Finally the Senate rejected by decisive vote the proposal to have the government compete with private shipyards in repairing government vessels.

German Treaty

Of these measures the German treaty is probably the most significant. It settles definitely the policy to be pursued with respect to the preferential treatment of goods imported in American bottoms by determining that any action that may be taken in this direction shall rest with the Senate. It leaves the door open to the inauguration of such a policy if Congress should so decide.

The principal article of the treaty affected by the Senate reservation, Article VII, reads as follows:

"All the articles which are or may be legally imported from foreign countries into ports of the United States in United States vessels may likewise be imported into those ports in German vessels without being liable to any other or higher duties or charges whatsoever than if such articles were imported in United States vessels."

Following this is the reciprocal clause affording United States vessels the same privilege regarding German imports.

The Senate reservation adds the proviso that this paragraph "shall remain in force for twelve months from the date of exchange of ratification, and if not then terminated on ninety days' previous notice, shall remain in force until Congress shall enact legislation inconsistent therewith when the same shall automatically lapse at the end of sixty days from such enactment." In other words, the hands of Congress are left untied.

The reservation is in the nature of a compromise acceptable to the State Department. It leaves to a future time the determination of the question whether or not the United States shall extend in this manner aid to American shipping. The State Department virtually framed the reservation, but this does not indicate that the administration has any intention at the present moment of attempting to put into effect the preferential policy.

The negotiation of other commercial treaties are under way along the same lines as the German treaty and in practically the same terms.

Home Port Bill

No objection was offered in the Senate to the Home Port Bill. Its enactment will relieve the anxiety that has arisen over the decision of the Circuit Court of Appeals at Norfolk, Virginia, which held that a mortgage recorded in the port of New York upon a vessel

owned by a Delaware corporation is invalid as to third parties, whether as a preferred mortgage or as an ordinary mortgage, even though the vessel is documented at the port of New York. The bill provides that any port may be chosen as the home port and that all documents relating to the vessel shall be recorded at the home port.

Navy Yard Competition

The Senate's rejection of the provision (in the bill making appropriations for the Shipping Board) designed to bring the navy yards into competition with private yards in altering and repairing government-owned merchant vessels, left no doubt of the unpopularity of this proposal. Democrats joined with Republicans in casting a decisive vote against it. In the course of the discussion Senator Fletcher of Florida made an extended plea for government ownership of the merchant fleet, contending that in no other way would adequate shipping facilities be provided. But it was evident that the extension of the government ownership theory does not find strong support in the Senate.

General Average Conference

Several Pacific Coast organizations have been invited by the Chamber of Commerce of the United States to send representatives to the conference which is to be called in March to formulate a policy with respect to the York-Antwerp general average rules. The date for the conference has been changed to March 15. The organizations invited are the Pacific-American Steamship Association, the Shipowners Association of the Pacific Coast, the Hood River Apple Growers' Association, the California Fruit Growers' Association, the California Grape Growers' Exchange, and the Cannerymen's League of California.

Codifying Navigation Laws

The work of revising and codifying the navigation laws, which has been lagging for two years or more, has been taken in hand by the Shipping Board, which has instructed its legislative committee to undertake the matter. This has been done, and a staff has been set to work. Assurance is given that the task will be completed some time during the summer, probably in July, and that it will be ready for submission to the new Congress at the first regular session. In the meantime opportunity will doubtless be given to those interested to scrutinize the laws and regulations and to make suggestions for changes.

Employment of American Vessels

Current reports on the employment of United States merchant vessels of 1000 gross tons and over, issued by the Bureau of Research, United States Shipping Board, indicate increased activity on the part of American shipowners in foreign commerce.

On January 1, 1925, the number of American vessels engaged in foreign trade was 677, an increase of 47 over the number employed in that trade on October 1, 1924. Forty of these added ships are owned by private shipping companies, the remaining seven being vessels put into service by the United States Shipping Board. These additions increase the cargo carrying capacity of our active foreign trade fleet nearly 500,000 tons, the total gross tonnage of that fleet on January 1, 1925, being approximately 4,050,000 tons.

In analyzing the activities of this foreign trade fleet
(Continued on page 38, advertising section)

MARINE INSURANCE

AN INTERESTING GENERAL AVERAGE

ANNOUNCEMENT has been made in Honolulu of a compromise effected between the North German Lloyd, owner of the German steamship Pommern, and owners of cargo who had contributed \$87,750 in general average ten years ago when the Pommern sought refuge in Honolulu harbor. After what are described as attempts of the steamship company to settle for 25 per cent, then 50 per cent, the claims of cargo owners have been paid in full, but, it appears, without interest. The assessment of general average and the diversion of the fund to the North German Lloyd are an interesting and perhaps unusual chapter in marine insurance.

On August 1, 1914, the Pommern, laden with wool consigned from Australia to British and Italian owners largely, was out of Brisbane between Sydney and Melbourne when her master, Captain J. Minssen, received news of the outbreak of the war. He chose to run to Honolulu for refuge and arrived August 19.

On this voyage, for which she was not prepared in more ways than one (the only chart of Hawaii on the vessel, it is said, was a small advertising folder), the Pommern burned some 1400 bags of copra in lieu of coal. Because of this and because of extra coal consumption, the North German Lloyd demanded, as precedent to delivery of cargo: 1. Surrender of the full set of each bill of lading. 2. Payment of distance freight to Honolulu equal to three-eighths of the amount shown on the bill of lading. . . . 3. Signing of general average bond. Production of certified copy of original invoice made at time of shipment and payment of 20 per cent of the invoice value as contribution to general average.

This demand was reduced to 15 per cent. Ten per cent had been discussed, but 5 per cent was added "to be safe."

This general average fund was sent in installments of \$25,000 to New York, according to announcement made in Honolulu, in response to requests from Oelrichs & Co., New York, agents for the North German Lloyd. What became of it is not known. Recovery was made by the Trent Trust Company of

Honolulu, representing virtually all the British cargo owners.

The points at issue, according to C. F. Clemons of Honolulu, an attorney connected with the case, were: "(1) whether the case was in law one of general average, and (2) if so, how so considerable an amount as 15 per cent was chargeable against the consignees." Clemons continued: "The way the master and the agents interpreted the law was that the cargo owners should stand the loss and hold up of 15 per cent deposit in advance, to be held for a time which in view of the then beginning war was certain to entail a considerable loss of interest. Indeed, by the time the case was settled, the interest amounted to about two-thirds of the principal aggregate of deposits. . . . The master ignored the equitable considerations entering into the law of general average . . . ; for evidently the master seemed to believe his 'paramount' obligation to be to the vessel owners and not,

in such case, to feel in any degree that he was 'charged with a joint agency for the owners of the cargo and the vessel.' . . . The Germans did not want the British consignees to get that large cargo of Australian wool and hides. . . .

"From the standpoint of international law, or rather of the law of war, the case presents interesting features. Thus, in the first place, in the case of capture by a British war vessel of a German ship laden with cargo of exempt British consignees, the cargo would be exempt—obviously, it would be foolish for the British to condemn as a prize the property of their own nationals. And the logic of the Pommern's master and agents on this point is impossible. . . . Moreover, this British cargo, consisting of hides and wool, was not even 'conditional contraband' . . . ; it was absolutely not capable of being declared contraband of war at all."

At any rate, the money has been returned and the case is closed.

Coal and Cotton

AMENDED rulings of the New York Board of Underwriters governing the shipment of coal and cotton on the same ship, to become effective March 1, provide for special protection to guard against the possibility of fire being communicated from either one to the other. The rules are as follows:

"Cotton and coal should not be carried in the same compartment. Where a steamer has two or more decks cotton and coal may be carried in adjoining compartments in the lower holds, when these compartments are separated by a steel bulkhead.

"Coal may be carried in the tween-deck of a two-deck steamer over cotton in the lower hold, provided the hatches are battened down and tarpaulined, the hatch tarpaulins to be covered with asbestos and protected by metal sheathing.

"Cotton and coal may be carried in the tweendeck of a two-deck steamer, provided a two-inch bulkhead is constructed to separate these two commodities. It is also to be understood that the coal side of the

bulkhead is to be covered with sheet asbestos and to be protected with suitable metal sheathing.

"Coal may be carried in the bridge deck over cotton in the tweendecks and lower hold, provided the hatches are properly battened down and protected as above. Coal and cotton may be carried in the bridge deck, providing the same precautions are taken as outlined above, where coal and cotton are carried in the tweendecks."

TRADE LITERATURE

McIntosh & Seymour Corporation has just issued a Bulletin No. 80, entitled *Achievement in Motor Ships with McIntosh & Seymour Diesel Engines*. This is an addition to a booklet published under this title and contains descriptions of several of the newer installations of the McIntosh & Seymour engines, thereby demonstrating further the various uses that diesel engines are being put to in place of steam engines and boilers. The book contains many interesting layouts and photographs.

THE MONTH IN MARINE INSURANCE

By CHARLES F. HOWELL, Contributing Editor

RETURNS on the business of 1924 are now sufficiently in hand to enable us to present a comprehensive and fairly accurate retrospect of the marine insurance interests of last year, and to estimate the probabilities of profits or loss. At the outset it may be asserted that 1924 was neither interesting nor profitable for marine insurers. Some of the more conservative offices are claiming to have made a little money, and are pointing to their experience as a justification of caution and the art of "going ahead slowly," but the rank and file are not boasting of what their annual statements are showing with respect to last year's achievements. It was a period of hesitancy and of readjustment. As far as cooperative effort in the matter of bettering rates and conditions goes, it was notable for its absence; there was some attempt, particularly in London, to improve the phraseology and up-to-dateness of certain clauses and forms; and, of course, there was the revision of the York-Antwerp Rules and the consequent advance in the matter of a standardization of general average, and there was also the final re-writing of the Hague Rules. These were creditable performances in the field of association or general work, as was also the bringing of order out of the insurance chaos created by the earthquake and fire at Japanese ports. But rates and conditions have gone from bad to worse, and in this highly important particular the record of 1924 was distinctly reactionary.

Rate Situation Bad

The premium volume was pretty much the same in 1924 as it had been in 1923, but rates were steadily depressed and the run of losses was heavy. Cargo interests fared rather better than did the hulls—too much of the latter class finding its way abroad via the cut-rate route. Certain industrial factors figured large in the general result; such as the high price of grain toward

the close of the Lake season, and the flourishing security market of the end of the year. These elements helped the investment side of the account immensely, and helped to pull some of the weaker organizations over the bar; it must not be confused, however, with the profit or loss of underwriting proper, which is quite another affair. There were numerous total losses in 1924. Scarcely had the year got under way when three total sugar losses ran up a debit of \$1,500,000 against the underwriters on them. There was a run of disasters to big ships in the Australian trade, most of them carrying highly valuable cargoes. It is worthy of note, however, that partial losses were kept very well in hand in 1924, due doubtless to a better handling of ships and cargoes. Of this latter phase it may be observed in passing that many underwriters ascribe this reduction in partial losses to the restricted foreign carrying trade; that is to say, only the better ships and abler masters and crews have been in steady employment, with the result of an improved experience turned in as respects the insurance accounts. The Atlantic had more than its average of bad storms and heavy weather, the Pacific produced a steady run of claims for both total and partial losses, the Great Lakes scored disaster after disaster, and the Gulf did its best to help out by reporting a very moderate loss ratio and an unusual freedom from hurricane calamities.

The hull business in America has almost faded out of the picture. Cut rates have stripped the class of attractiveness and most of our offices have been quite content to see the business go abroad rather than court certain loss by competing with suicidal quotations. Writing hulls has been described as "a rover's game" with little approximating standardization about it. Each case is peculiar to itself. In this respect it is less consistent than cargo underwriting, where something approach-

ing a tariff may occasionally be observed. American hull writers are of opinion that one of the most conspicuous factors in the demoralization of the business is the ease with which large reinsurances may be effected abroad, and they argue that little of relief is likely to be forthcoming until our underwriting interests become more self-supporting than at present.

Cargo underwriting has slipped rather than advanced. Rates and conditions could scarcely be worse; and yet the insured are clamoring for cheaper protection. Competition was never more unreasonable. It is no doubt true that a condition has now been reached in which, both here and abroad, the assured through their brokers can come close to fixing the rates at which business may be had by the underwriters. This is a complete reversal of the established order of things and a bad state of things altogether. Underwriters should compel a basis of action by which they themselves may set their own prices on what they have to sell, just the same as any other retailer does to his customers. Practically all other classes of industrial prices remain high, and yet insurance has not been advanced under war conditions, but has steadily slumped under the pressure of the demands of its buyers and the greed developed through a great hunger for premiums on the part of the underwriters themselves.

Pilferage Reduced in 1924

The picture is not altogether dark. Theft and pilferage has been greatly reduced, there is concerted action against hook damage, shipboard fires have been kept well in hand, and much is hoped for from the decided improvement in trade and economic conditions in Europe. Ore movements on the Great Lakes were up to normal, as was also that of grain; but, with respect to the latter, it has to be confessed that the rate situation has been bad enough, this commodity having been written in

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Canada as low as three cents. Foreign political conditions have not been so productive of port congestions as in 1923, and the outlook is bright for an improvement generally in 1925 and the establishment of a broader foreign market.

Risky Gold Shipments

Marine underwriters have been mildly excited of late over the chances they find they have been taking in covering gold shipments at low figures. An enormous quantity of the precious metal, both in bullion and coin, has been passing out of the United States to foreign countries, upwards of \$10,000,000 having been shipped from the port of New York in as limited a period as two or three weeks. Two distinct sets of conditions have been forced upon the attention of the insurers. One is the use of parcel post for the carriage of gold, and the other is an "all risks" cover under a modified form at ridiculously low rates.

With respect to the former it may be said that until recently practically all of the gold shipped either to or from South America and underwritten by our insurance companies has been forwarded under Treasury bills of lading, by the terms of which the steamship companies became responsible for the full value of the gold from the time of receipt until the delivery to the customs at destination. The carriers' charge, under these conditions, was based upon the actual value of the metal, rather than upon its weight or bulk. But more recently banks and other shippers of gold have discovered that they could save considerably on the transportation charges by making use of the parcel post instead of the steamship bills of lading. The result has, very naturally, been that the gold has received a minimum of care in transport, for the steamship companies have no way of knowing what is in the mail bags and therefore exercise just the same caution as if they

were handling old boots and shoes. Parcel post mail is generally stowed by steamship lines in wooden lockers in the hatches, which makes it all the easier for fire to get at it or pilferers to tamper with it. When the former transportation method prevailed under the issuance of Treasury bills of lading the gold was stowed in the ship's safes and so became practically immune from the depredations of thieves or damage arising from fire or water. Under the bill of lading method the gold was carefully guarded by armed men when it was received and discharged and in transport, after discharge, to points in the interior.

The postal authorities have no liability for loss of gold in shipment, and they will not insure it. It can be registered, but no liability attaches to the government on that account. After discharge, the gold in parcel post shipments lies around docks and in customs just as though it were ordinary cargo, and there is no armed guard to care for it when forwarded to interior destinations. Why do underwriters write it at low quotations under such conditions as these? Simply because they have been in ignorance of how carelessly it has been handled.

Now for the second offense against carefulness in gold shipments. The long voyages to India and Australia are negotiated with gold insured under the modified form, written "all risks," and without warranty of its being placed in the vessel's strongroom or that it is either received or shipped under armed guard. This form of coverage is selling at close to one-eighth per cent. It is easily worth three and four times that figure, even with the very best of guarantees as to safeguarding. It is astonishing how much the underwriters are willing to throw in. For example, they charge absolutely nothing for the hazards that accompany the trucking of the gold across town to the docks. Recently one

heavy consignment of gold for India was delayed seven hours in the hands of a trucking company while waiting at a New York dock to be placed aboard the ship. Anyone familiar with conditions along the New York waterfront knows what this means. It was worth 12½ cents for the risk from the Federal Reserve Bank to the ship's deck, but the careless underwriters coolly asked nothing on that score. It is said that one very considerable shipment of gold was recently seen lying spread out on a New York dock with no one to look after it but a couple of negroes. You would hate to treat last year's straw hat in that nonchalant manner.

New General Average Clause

The preliminary draft of the Institute of London Underwriters' general average clause, which proved to be unsatisfactory in connection with the application of the revised York-Antwerp Rules, 1924, has been replaced by a final and permanent form which reads as follows:

"General average and salvage to be adjusted according to the law and practice obtaining at the place where the adventure ends, as if the contract of affreightment contained no special terms upon the subject; but where the contract of affreightment so provides, the adjustment shall be according to York-Antwerp Rules, 1890 (omitting in the case of wood cargoes the first word 'no' of Rule 1), of York-Antwerp Rules, 1924."

As in the early draft, in the final form the question of adjustment is left to a certain extent to the shipper and the shipowner. Should the contract of affreightment contain a proviso that adjustment shall be according to York-Antwerp Rules, 1890 or 1924, the underwriters will settle general average claims adjusted accordingly. But if the contract of affreightment provides for adjustment in any other way, this provision will be disregarded so far as

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the settlement of claims is concerned, and the underwriters will pay general average claims only when adjusted according to the law and practice obtaining at the place where the adventure ends.

This is an important consideration, as otherwise the interests of underwriters might easily suffer from prejudicial conditions. For example, it is cited that if the contract of affreightment contained a provision for the adjustment of general average according to Greek law, then the effect would be adverse as regards the cargo interests, for in Greece hull and freight contribute to general average on half their value, while cargo contributes on its full value.

Heavy Compress Losses

It is a gloomy picture that the cotton insurance business presents so far in the 1924-1925 season. Enough has happened to the 1924 crop since it began to be picked, at the beginning of August last, to warrant the most pessimistic forebodings. It has been the most disastrous season of any for years, as respects cotton compress and warehouse fires in the South. At least \$3,000,000 may be charged to this source of loss so far this season. The loss in bales approximates 22,000—a staggering reverse for the shore-end of the marine contract.

The Texas ginning season is usually reckoned as running from August 1 to November 1, and that the cotton season is generally from August 1 to July 31, but this year's policies are being made out for eleven months—from September 1 to July 31. The reason for this change is a desire to insure the crop as soon as it starts moving, so that the underwriters' books will correspond with those of the cotton shippers. Strange as it may appear, in view of such losses as are mentioned above, there continues to be a demand for a lower insurance rate; and in too many instances the un-

derwriters are granting the request. Certainly there is every reason for stabilizing the rates, particularly as the expense ratio continues to remain at the high level forced by the war.

Hague Rules Hearing

At the recent public hearing by the House Committee on the Merchant Marine and Fisheries, the proposed Carriage of Goods by Sea Act (H. R. 11447), which was introduced by Representative Edmonds on January 8, 1925, and referred to this committee, was thoroughly discussed by a large and very much interested group of visitors. The marine insurance interests were represented by President Louis F. Burke of the American Institute of Marine Underwriters; G. B. Ogden, chairman of the Institute's Hague Rules Committee; and that body's counsel, D. Roger Englar; while the Insurance Company of North America had a member of the law firm of Lewis, Adler & Laws to look after its affairs.

The proposed bill meets with the cordial endorsement of the underwriters, although they feel that certain minor changes in the phraseology of one or two sections could be made advantageously and in the interest of clarity. Mr. Charles S. Haight, who was one of the American representatives at the International Conference at Brussels when the Hague Rules were revised last year, was on hand and plunged into a defense of the bill with all his accustomed vigor. His enthusiasm has won among his friends the title of "the Haight Rules" for these new regulations.

In the opinion of the underwriters Section 4, which deals with deviations, would be more satisfactory if the original language of the International Conference were to be substituted for the proposed American form. This would mean the introduction of the word "reasonable" before that of "deviation," and would

make the clause read as follows:

"Any deviation in saving or attempting to save life or property at sea, or any reasonable deviation shall not be deemed to be an infringement or breach of these rules or of the contract of carriage, and the carrier shall not be liable for any loss or damage resulting therefrom."

Another change of phraseology was suggested for Section 5, which covers the question of the limitation of liability, particularly as regards a clearer definition of the word "unit" contained therein. The desired alteration would make the section read thus:

"Neither the carrier nor the ship shall in any event be or become liable for any loss or damage to or in connection with goods in an amount exceeding \$500 per package or customary trade unit, or the equivalent of that sum in other currency, unless the nature and value of such goods have been declared by the shipper before shipment and inserted in the bill of lading."

News in Eastern Offices

The interment of the remains of the late John Ferguson, marine manager of the American Foreign Insurance Association, was made at Sefton Church, Liverpool, in the presence of a large gathering on January 12. It took a half column of fine print to give the names of those who were present.

At the recent annual meeting of the board of trustees of the Atlantic Mutual Insurance Company, Secretary George Stanton Floyd-Jones retired and the present assistant secretary, Frank D. Denton, was appointed to the position. Mr. Floyd-Jones was the oldest employe of the company, both as regards age and actual service. He is in his seventy-sixth year, and joined the company in September, 1865. Mr. Denton has been with the Atlantic Mutual since September 10, 1889.

W. C. Spelman and L. Wagle have

joined the Board of Underwriters of New York as representatives of the Union Marine, Phoenix of London, Norwich Union, and the Columbia of New Jersey.

The Niagara Fire has been admit-

ted to membership in the Board of Underwriters of New York, and will be represented by Frank H. Cauty, H. W. Spieer and A. B. Grant.

At the recent annual meeting of the Board of Underwriters of New

York, all the present offices were re-elected for another year. C. R. Ebert, J. E. Hoffman and G. C. House were elected directors to fill the vacancies created by the outgoing class of three.

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Freights and Charters

February 17, 1925.

SINCE our last report rates have been firm in all trades, but at this writing there is apparently a lack of new business with no firm offers for tonnage. There is still a scarcity of tonnage offering for Pacific trading and it is difficult to forecast what rates will prevail for April/May/June, as charterers are not looking for tonnage and tonnage is not offering.

The following steamers have been reported fixed with lumber to Australia: Norwegian stmr. Golden Gate, \$15, Feb.-Mar. loading, W. L. Comyn & Co.; British stmr. City of Victoria, \$15, Mar. loading, same charterers; American schr. Elinor H, \$14.50, Feb. loading, Pacific Export Co.; American schr. Ella A, \$14, Mar. loading, J. J. Moore & Co. The American bktn. Forest Pride is reported fixed for lumber from the North Pacific to Noumea, \$15, J. J. Moore & Co.

For lumber to the Orient the following steamers have been reported fixed: Japanese stmr. Asaka Maru, Feb.-Mar. loading, National Commercial Corp.; Japanese stmr. Hakuyo Maru, \$11.75, Feb. loading, charterers not mentioned; Japanese stmr. Hakyo Maru, \$11.75, Mar. loading, charterers not mentioned; Japanese stmr. Koki Maru, \$12, Mar., National Commercial Corp.; Japanese stmr. Yogen Maru, \$11.50, Mar., Mitsui & Co.

The Italian stmr. Livenza has been fixed for lumber from the North Pacific to Spain, \$20.50, Feb. loading, by Douglas Fir Exploitation & Export Co.

The American m.s. Frank Lynch is reported fixed from Grays Harbor to New York, \$14.25, Mar. loading, by Pacific Export Lumber Co.; American stmr. Orinoco from Puget Sound to North of Hatteras, terms private, Feb. loading, by H. D. Davis Lumber Co., and the American stmr. Georgian from Puget Sound and Columbia River to North of Hatteras, \$14.25, by C. R. McCormick & Co.

A Japanese steamer has been reported fixed from the United Kingdom to Pacific Coast ports with pig iron, etc., at 19/6 per ton of 2240 lbs., by Balfour, Guthrie & Co.

The following steamers are re-

ported taken on time charter: Norwegian stmr. Golden Gate, 12 mos., delivery Feb., redelivery Pacific Coast, \$7600 monthly, Feb.-Mar. loading, A. M. Gillespie, Inc.; British stmr. City of Victoria, one year, delivery North Pacific, redelivery North Pacific, \$10,125 monthly, same charterers; British stmr. City of Vancouver, same, \$9500 monthly, W. L. Comyn & Co.; American stmr. Hamlin F. McCormick, delivery Gulf of Mexico, redelivery Pacific Coast, terms private, Swayne & Hoyt, Inc.

The following tanker fixtures have been reported: American tanker D. G. Schofield, San Pedro to Wellington, terms private, Mar. loading; American tanker District of Columbia, California to Boston, gasoline tops, 77 cents, Mar. loading; American tanker W. W. Mills, California to United States Gulf port, \$1, clean, Feb.-Mar. loading; Norwegian tanker San Joaquin, California to Copenhagen, 26/6, gas oil, Feb. loading, and an unnamed tanker, California to North of Hatteras, 68 cents, gasoline, Feb. loading.

The following sales have been reported: American stmr. Hyades, Matson Navigation Co. to Frank B. Peterson; trawler M. K. 3, \$1575, U. S. Marshal to E. S. Lucido, Monterey; American stmr. W. M. Tupper, Gulf & Southwestern Steamship Co. to Capt. Wallace Langley, Seattle; gasoline schr. Mae Hyman, Thomas Crowley to Standard Gypsum Co.; American tanker Betterton, U. S. Shipping Board to South Atlantic Maritime Corp.; Wm. H. Talbot (seized for carrying contraband), Chinese government to C. P. Halcomb, 5750 taels; American stmr. Eastern Gale, U. S. Shipping Board to Booth Fisheries Co., Seattle.

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Ships' Electrical and Mechanical Telegraphs, Gongs, Voice Tubes, and Accessories, No. 85-29-A is the title of a new Cory bulletin.

This is a splendid bulletin describing ships' telegraphs and associated equipment. It contains a wealth of description and illustrations, and may be obtained by sending a request to Chas. Cory & Son, Inc., 183 Varick street, New York City.

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SHIPBUILDING AND

SHIP REPAIRING

Work in Prospect

Shipbuilders on the Atlantic Coast have been greatly encouraged during the past month by various indications of increasing optimism on the part of owners. Among these was the announcement that the Merchants & Miners Transportation Company of Baltimore is about to ask for bids on two new passenger and freight ships of the same type as the Berkshire and Allegheny for coastwise service. The dimensions and particulars of these two vessels are: length over-all, 368 feet; length between perpendiculars, 350 feet; beam molded, 52 feet; displacement, 7000 tons; gross tonnage, 5486. The vessels will have four decks and accommodations for 205 first-class passengers and 27 steerage. Propulsion power will be steam, with triple expansion, 4-cylinder engines, oil burning Scotch marine boilers and twin screws.

Bids have been asked by Gibbs Bros., New York, as agents for the Ford Motor Company on the conversion and reconditioning of the cargo steamers Courageous and Triumph, purchased from the Shipping Board. The vessels are 457 feet long and have a deadweight capacity of 11,160 tons each. They were built at the Bethlehem Shipbuilding Corp., San Francisco.

They are to be equipped with 2800 brake horsepower Burmeister & Wain type diesel engines as built by the William Cramp & Sons Ship

& Engine Building Co. All auxiliary machinery will be electrically driven, and when completed it is expected that the vessels will be finest examples of their type.

It was also announced that the Shipping Board is about to send out to prospective bidders specifications for auxiliary machinery to be employed in connection with conversion of Shipping Board vessels to diesel engine drive, contracts for which have all recently been signed with engine building companies.

Word comes from Washington that the Coast Guard will seek appropriations from the next Congress for the construction of three additional revenue cutters for the San Francisco Bay district to cost about \$900,000 each. There is only one cutter now in year-round service from that base, as the only other cutter, the Bear, goes every summer to Alaskan waters.

The Fire and Police Departments of Alameda, California, are now drawing plans for a high-speed, gasoline-engined combination patrol and fire boat for the Oakland estuary, to cost about \$35,000.

The Portland, Oregon, Harbor Commission has issued call for bids on the construction of a harbor patrol launch. The launch will be of wood, 61 feet over-all, 13 feet beam, and 5¾ feet depth. Diesel engine for this boat has already been ordered.

The Foss Steamship Company, Tacoma, Washington, has taken over

the tug Fearless, one of the best known on Puget Sound, and will install a diesel engine.

The U. S. Army Engineer Office, Philadelphia, will open bids, March 6, for the construction and delivery of one 20-inch pipe-line dredge. The vessel is to be 227 feet 10½ inches over-all, 40 feet molded breadth, and 8 feet draft, and diesel-engine powered.

The Eastern Steamship Lines, Inc., Boston, may build a passenger steamer for its Boston to Yarmouth service. The vessel is to be designed by Theodore Ferris of New York. It may possibly be built abroad.

Recent Contracts

J. C. Johnson, Port Blakely, Wn., has orders for two cannery tenders, 65 feet long, and twelve gill at sailboats, 28 feet long, for Libby, McNeill & Libby for their Alaska fishing fleets. He also has a contract for the construction of a tugboat for the Cary-Davis Tug & Barge Co., Seattle, to cost \$30,000, engined with Western-Enterprise full diesel engines.

Collingwood Shipbuilding Company, Collingwood, Ontario, has a contract for three bulk freighters for the Geo. Hall Coal & Shipping Co., Montreal, keels for which have been laid. The steamers will be 252 L. B. P., 43 feet beam, and 14 feet draft, with triple expansion steam engines.

Bath Iron Works, Bath, Maine, has contract from Cox & Stevens, naval architects of New York, for six



STEAMER ARCTURUS

At the left is reproduced a photograph of the steamer Arcturus being overhauled and refitted at the Tebo plant of the Todd Shipyards Corporation preparatory for a voyage of exploration to the Saragossa Sea.

That area of the Atlantic Ocean lying between the continent of South America and the Cape Verde Islands, known as the Saragossa Sea, is to be explored by a party of scientists from the New York Zoological Society. The steamer is 280 feet long and 46 feet in beam and is the largest vessel ever made available for a voyage of this kind. Carrying the latest deep sea sounding apparatus, steel cables six miles in length for dragging the ocean bottom, modern laboratory equipment, and an extensive installation of refrigerators and tanks for preserving specimens of animal and plant life, the results of this voyage should be of great scientific and general interest.

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schooner yachts for various persons. They will be 58 feet over-all, 12 feet beam, 7 feet 6 inches loaded draft. This company also has an order for an express cruiser for Clifford Brokaw and an express cruiser for Chas. E. F. McCann.

Bethlehem Shipbuilding Corp. is building at its Sparrows Point Plant a dredge hull for Ellicott Machine Corp.

IN PACIFIC COAST SHIPYARDS

**SHIP REPAIRING
SHIP BUILDING
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ENGINE REPAIRS**

Midland Barge Company, Midland, Pa., has an order for a steel wharfboat, 225 feet long, 45 feet beam, and 2 feet depth for Coney Island, Inc., Cincinnati.

Midland Shipbuilding Company, Ltd., Midland, Ontario, has an order for a bulk freighter for the Great Lakes Transportation Co., Midland, Ontario, which will be a sister ship to the Gleniffer they are now building. The vessel will be 582 L. B. P., 60 feet beam, 20 loaded draft, 12,000 D. W. T., and equipped with triple expansion engines. Keel will be laid about March 26.

Pusey & Jones Co., Wilmington, Del., has contract for a steel ferryboat for the Chesapeake Ferry Co., Norfolk, Va., to be 200 feet long, 60 feet beam, and 15 feet depth, and to cost about \$350,000.

Sun Shipbuilding Company, Chester, Pa., has an order for a towboat for the International Petroleum Co., Toronto, Canada, 160 feet long, 44 feet beam, and 3 feet loaded draft.

Keel-layings

Two bulk freighters for Geo. Hall Corp. by Collingwood Shipbuilding Co., Jan. 31 and Feb. 2.

Barge by Nashville Bridge Co., Feb. 6.

Coamo, combination steel steamer for New York & Porto Rico S. S. Co. by Newport News Shipbuilding Co., Jan. 19; also two steel barges for U. S. Engineers, Feb. 6.

Launchings

Yuba, snag boat for U. S. Engineers by A. W. de Young Boat & Shipbuilding Co., Alameda, Calif., Feb. 7.

Tugboat for Milwaukee Tugboat Line by Manitowoc Shipbuilding Corp., Jan. 31.

Dolly Barrett, steel deck barge, Barrett Line by Midland Barge Co., Feb. 7.

Barge for International Cement Corp. by New York Shipbuilding Corp., Feb. 2.

El Oceano, freight steamer for Southern Pacific Co. by Federal Shipbuilding Co., Feb. 14.

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IN ATLANTIC COAST SHIPYARDS

SHIP REPAIRING SHIP BUILDING RECONDITIONING ENGINE REPAIRS

Deliveries

Klamath, ferryboat, to Southern Pacific Co. by Bethlehem Shipbuilding Corp., Union Plant, Jan. 26.

C. G. 256 and C. G. 257 to Coast Guard by A. W. de Young Boat & Shipbuilding Co., Jan. 7 and 10.

Amelie, cannery tender to P. E. Harris & Co., Seattle, by J. C. Johnson's Shipyard, Portland, Feb. 11; two trap scows to Sunny Point Packing Co., Feb. 10.

Memphis, scout cruiser, to U. S. Navy by Wm. Cramp & Sons Ship & Engine Building Co., Jan. 31.

Carfloat, Bush Terminal by Bethlehem, Harlan Plant, Jan. 14.

Robert E. Lee, combination steamer, Old Dominion S. S. Co. by Newport News S. B. Co., Jan. 17; two freight house barges to the Chesapeake & Ohio R. R. Co., Feb. 3.

Repair Awards

Todd Dry Docks, Inc., Seattle, Washington, was successful bidder on contract for general reconditioning of the American-Oriental Mail liner President Madison. This work will cost \$155,000. The Navy Yard at Bremerton submitted a bid of \$149,477, but the work was granted to the Todd yard in accordance with the recent ruling of the Shipping Board to favor private yards when the difference in bids is not too great.

This is the last of the five Shipping Board freighters operated by the Admiral Oriental Line to be reconditioned. The work on all five vessels went to the Todd plant, involving a total cost of \$640,000.

The Victoria Machinery Depot Co., Inc., Victoria, British Columbia, is engaged in repairing the coastwise vessel Amur at a cost of about \$15,000.

General Engineering & Drydock Company, Oakland, California, was low bidder on repairs to Shipping Board freighter President Taft, in the amount of \$1388.

Bethlehem Shipbuilding Corporation, San Francisco, was lowest bidder on reconditioning of the T. K. K. liner Ginyo Maru, which was seriously damaged by fire off the coast

of Mexico during January. Bids submitted were as follows:

Bethlehem Shipbuilding Corporation, \$303,896 and 70 days;

Moore Drydock Company, \$306,100 and 130 days;

Los Angeles Shipbuilding & Drydock Corp., \$325,000 and 99 days;

Albina Ship & Engine Works, Portland, \$347,750 and 100 days;

Willamette Iron Works, Portland, \$388,483 and 120 days;

Todd Dry Docks, Inc., Seattle, \$390,000 and 100 days;

Smith & Watson, Portland, \$390,500 and 105 days.

The bids submitted are considerably lower than the underwriters anticipated, and it is therefore probable that the repairs will be performed on this coast rather than in Japan.

* * *

Shipyard Notes

The prospect of the establishment at Honolulu of a branch of the Union Plant of the Bethlehem Shipbuilding Corporation has again come to the fore with the visit of J. J. Tynan to Honolulu. Mr. Tynan, in speaking to the press, stated that while nothing definite had been settled, his company "has been tentatively considering a possible site for the establishment of our plant."

* * *

The powerful tugboat Jean of the Standard Dredging Co. of New York, was recently equipped with 200-horsepower 4-cycle diesel engine by the Union Gas Engine Company of Oakland, California. The boat was built in Seattle and is 70 feet long, 17 feet beam, and 7 feet 6 inches draft, and will have a speed of 11 knots.

The Union Gas Engine Company are about ready to ship two of the same type diesel engines to Tahiti, where they will be installed in vessels now building for inter-island trading.

Another job on which this company is working is the installation of a 200-horsepower Union diesel on the Hunt-Hatch towboat Surprise to replace two 65-horsepower Union gasoline engines installed by this company when the towboat was built twenty years ago. The towboat is being overhauled at the Stone Yard, Oakland.

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The New England Maritime Corporation of Boston purchased at auction the first of February the property of the bankrupt Atlantic Coast Company, Portland, Maine, including twenty-two schooners, the Thomaston shipbuilding plant, and the land, buildings, and marine railway of the company at Boothbay Harbor.

* * *

San Francisco Dredging Company has purchased thirty acres of land on the Richmond, California, inner harbor as a site for its warehouses, shops and general equipment storage. This land will be filled in and part of it used for other industries for shipping frontage.

* * *

The Markey Machinery Co., manufacturers of the Sumner diesel engine, are planning to enlarge their Seattle plant with the addition of buildings and equipment.

Steamship El Oceano Launched

THE Federal Shipbuilding and Dry Dock Company launched at their yard at Kearny, New Jersey, February 14, the steamship El Oceano, which they are building for the Southern Pacific Lines. The El Oceano is the largest general cargo vessel built in any American yard since the end of the war shipbuilding program.

The vessel was designed by and built under the supervision of Amos S. Hebble, superintending engineer of the Southern Pacific Steamship Lines. She is 433 feet in length over-all, 56 feet in width, and will have a deadweight tonnage of 7950 on 26-foot draft, at which draft the estimated sea speed is 14 $\frac{3}{4}$ knots.

Particular attention has been paid to the quick and economical hand-

ling of cargo. There will be five centerline hatches and fourteen side-ports, through which cargo can be expeditiously handled in the main and lower decks. Rich smoke detector system has been installed throughout the vessel, supplemented by special type of fire extinguishing apparatus.

Propelling machinery consists of steam turbines developing 5500 shaft horsepower, steam being supplied by water-tube marine boilers with superheaters.

Upon completion she will be put in service by the Southern Pacific Steamship Lines from New York to New Orleans in connection with the rail lines of the Southern Pacific Company, which extend westward from New Orleans and Galveston.

Steamer Cherokee

The steamer Cherokee, first of three passenger and freight ships building by the Newport News Shipbuilding & Drydock Company for the Clyde Line, was launched during February. The Cherokee is 402 feet over-all, 54 feet beam, and 29 feet 9 inches loaded draft. She is of steel construction throughout. Cargo decks are protected against fire by automatic fire detecting and extinguishing systems. There are ample side ports for quick handling of cargo. There will be well-ventilated compartments for the carrying of fresh fruits, vegetables and other perishables. The Cherokee and her sister ships will have capacity for 448 passengers, and accommodations will range from the ordinary two-berth room to suite consisting of parlor, bedroom and bath. The pro-

pulsion power will be Newport News-Curtis turbines, steam being supplied by Babcock & Wilcox boilers. The vessels were designed by Theodore E. Ferris of New York along lines and specifications laid down by H. H. Raymond, president of the Clyde Line.

The Sun Shipbuilding & Dry Dock Corporation, Chester, Pennsylvania, has secured the contract for conversion of the 12,000-ton twin screw steamer East Indian, recently purchased from the Shipping Board by the Ford Motor Company. She is to be fitted with a Sun-Doxford opposed piston engine and is to be the first unit of the Ford Company's new overseas fleet. The company is now using the lakers Oneida and Onandaga in the Atlantic Coast-Gulf-South American service.

Shipyard Notes

The New York City Department of Plant and Structures has awarded contracts for six ferryboats, which involve a total cost of \$1,490,040. The awards were as follows: Two boats to be built by Staten Island Shipbuilding Company; two by the Tebo Yacht Basin Company; and two by J. W. Sullivan & Company. They are 151 feet long, 53 feet wide, and 15 feet draft.

The Robins Plant of Todd Shipyards Corporation has been awarded contract for reconditioning of tank steamer William Boyce Thompson on a bid of \$310,000 and 80 days.

The boat builders of British Columbia and other sections of Canada have sent resolutions to the Dominion government at Ottawa, asking that a protective tariff be made against foreign building of small craft. More than \$50,000 worth of small craft contracts have been placed in Hongkong for British Columbia owners during the past month. The vessels can be built in Hongkong and brought to Vancouver without duty. The British Columbia shipyards cannot compete with the cheap Chinese and Japanese labor of Hongkong or the price of teakwood, unless there is protection given by tariff.



Westinghouse, gasoline driven, electric generator for workboats and yachts, as exhibited at the New York Motorboat Show.

The Winton Engine Works, Cleveland, has been awarded contract for the twenty 150 brake horsepower engines for installation in the ten 100-foot motor patrol boats for the Coast Guard now building at the De Foe Boat & Motor Works, Bay City, Michigan.

* * *

The Alaska fisheries sailing fleets of Puget Sound and San Francisco Bay are now undergoing repairs and conditioning for the Alaska fishing season, which will open early this year. Six new halibut fishing schooners will join the fleet out of Puget Sound. Olson & Sunde Marine Works, Lake Washington, Seattle, are building the Chelsea for Ehler Brothers & Armstrong to cost \$35,000. This company is also building the Zenith for Iverson Brothers, both vessels to be engined with Washington-Estep engines. The Fishing Vessels Owners' Marine Ways are building a 70-foot schooner for Conrad Peterson, Andrew Johnson, and Johannes Selfjord, and a similar vessel for N. E. Hagge, Julius Petersen, and Paul Petersen. Sagstad & Morberg are building a 61-foot schooner for Capt. Edward Strand to be equipped with 75-horsepower Washington-Estep engine.



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SAN FRANCISCO, CAL.

The U. S. Shipping Board has sold the steel tank steamship Betterton to Frank W. Seth of New York for \$300,000 cash. By the terms of the deal, Mr. Seth is obligated to substitute reciprocating engines for turbine engines.

President Coates, president of the Cathlamet Ferry Company, Cathlamet, Washington, announces that his company will build two ferries 64 feet long and 26 feet beam to be powered with Fairbanks-Morse diesel engines.

Progress of Construction

Pacific Coast

BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT Potrero Works

Purchasing Agent: O. W. Streett.
Klamath, hull 5325, ferry steamer, Richmond & San Francisco Transp. Co.; 234 LOA; 44-10 beam; 12 loaded draft; 12 $\frac{1}{2}$ mi. speed; TE engs. 3 Scotch boilers; keel Sept 22/24; launched Dec 24/24, delivered Jan 26/25.
Hawanan Standard, hull 5326, diesel-electric tanker, Standard Oil Co. (Cal.); 210 LBP; 36 oil, 400 HP Pacific Worksport diesel engs; keel Nov 1/24; delivered Feb 28/25, est.

A. W. de YOUNG BOAT & SHIP-BUILDING CO., INC. Alameda, Calif

Purchasing Agent: Wm. Burns.
No. 256, hull No. 3, cabin cruiser, Coast Guard; 200 LBP; 11 $\frac{1}{2}$ ft high speed engs; keel Aug 18/24, launched Dec 9/24; delivered Jan 7/25.
No. 257, hull No. 5, sister to above; keel Nov 3/24, launched Dec 9/24, delivered Jan 10/25.
No. 258, hull No. 6, sister to above; keel Nov 25/24, launched Jan 10/25; delivered Feb 4/25, est.
No. 259, hull No. 7, sister to above; keel Nov 25/24, launched Jan 10/25; delivered Feb 5/25, est.
No. 260, hull No. 8, sister to above; launch Feb 14/25, est.
No. 261, hull No. 9, sister to above; launch Feb 14/25, est.
No. 262, hull No. 10, sister to above; launch Feb 25/25, est.

Yuba, snag boat, J. S. Engineers; 166 length; 37 $\frac{1}{2}$ beam; 5 depth; stern wheel, oil burning; accommodations for 40 crew; keel Nov 19/24; launched Feb 7/25; deliver Mar 25, est.
South Shore II, twin screw Bay freighter, South Shore Port Co., S. F.; 105 long; 32 ft beam; 7 ft 8 in depth; 2 90 HP Atlas Imperial diesel engs; keel Feb 7/25, est; deliver Mar 15, est.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

Amelia, cannery tender, P. E. Harris & Co., Seattle, 86x19x10, 165 HP Atlas Imperial diesel engs; keel Nov 3/24, launched Jan 17/25, delivered Feb 10/25.
Two trap saws, Sunny Point Packing Co.; 60 ft by 16 ft by 4 ft 3 in, delivered Feb 10/25.
Two cannery tenders, Libby, McNeil & Libby, 17x7, keels Feb 15/25, est; deliver Apr 15/25, est.
Twelve gill net sailboats, Libby, McNeil & Libby, 24x13.

NAVY YARD Puget Sound

Holland, submarine tender for government; 46 LBP, 61 beam, about 20 loaded draft; 16 K loaded speed turbine eng 7000 HP; two WT extra type boilers; 10,000 tons disp; keel April 21, delivery April 25, est.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
Three barges, Carnegie Steel Co., 175x26x11 ft, 175 LBP, 26 beam, 11 ft draft, 15 knots loaded speed, capacity 2000 passengers, 100 tons freight, one 4 cycle, TE eng, 1200 HP; 2 B&W boilers, 4450 square feet HS; keel Nov 1/24, launch Mar 26/25, est.

Work on the submarine tender Holland, which is building at the Puget Sound Navy Yard, Bremerton, Washington, will be rushed and 220 skilled mechanics put to work on this job. The yard hopes to receive some of the work of building the new cruisers and gunboats under the Naval construction program, as well as overhauling of existing battleships.

* * *

Captain Milton Smith, Rainier, Oregon, has completed his new towboat to ply the waters of the Cowlitz and Columbia rivers. The towboat is equipped to burn hogged wood fuel.

11 $\frac{1}{2}$; deliver spring 1925.
Six sand barges, J. K. Davison & Bro.; 135 x26x10; deliver June 25.
One acid tank barge, Carnegie Steel Co.; 175 ft by 26 ft by 11 ft; deliver summer 1925.
One cement barge, Kosmos Portland Cement Co.; 175x32x8.
Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.
No name, hull 790, self-unloading stone carrier, Bradley Transportation Co.; 566 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers.

COLLINGWOOD SHIPBUILDING CO. Collingwood, Ontario

Purchasing Agent: E. Polimore.
No name, hull No. 74, bulk freighter, Geo. Hall Coal & Shipping Corp., Montreal; 252 LBP; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface condensing; 700 HP 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Jan 31/25.
No name, hull No. 75, bulk freighter, sister to above, keel Feb 2/25.
No name, hull No. 76, bulk freighter, sister to above, keel May 2/25, est.

CONSOLIDATED SHIPBUILDING CORPORATION Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 180 HP Winton diesel engs.
Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.
Hull 2797, cruiser for R. F. Hoyt, 81 ft long; 2 Wright & Typhoe engs, 500 HP each.
Hull 2798, cruiser for H. C. Stutz, 65 ft long; 2 180 HP Speedways.
Hull 2799, cruiser for Elliott & Co., 44 ft long; 180 HP Speedways.
Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150 HP Speedways.
Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300 HP Speedways.
Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300 HP Speedways.
Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO. Philadelphia, Pa.

Purchasing Agent: Ed. C. Geehr.
Memphis, hull 503, scout cruiser, U.S.N.; keel Oct 4/20; launched April 24; delivered Jan 31/25.
Malibu, express passenger and freight liner, Matsun Navigation Co.; 582 LOA; 577 length at water line, 83 beam; 35 depth; displacement 22,050 tons, 8250 DWT; speed 21 knots regular, 23 tons maximum; 25,000 shaft horsepower; Camp Parsons turbines; oil burning B&W water-tube boilers; keel June 25, est.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Hurke.
No name, hull 98, passenger and freight steamer, New England Steamship Co.; 202 LBP, 36 beam; 10 loaded draft; 15 knots loaded speed, capacity 2000 passengers, 100 tons freight, one 4 cycle, TE eng, 1200 HP; 2 B&W boilers, 4450 square feet HS; keel Nov 1/24, launch Mar 26/25, est.

No name, hull 99, schooner yacht, builder's account; 58 LOA; 12 beam; 7-6 loaded draft; launch May-June/25, est; deliver June-July/25, est.
No name, hull 100, same as above.
No name, hull 101, same as above.
No name, hull 102, same as above.
No name, hull 103, same as above.
No name, hull 104, same as above.
No name, hull 105, same as above.
No name, hull 106, same as above.
No name, hull 107, same as above.
No name, hull 108, same as above.
No name, hull 109, schooner yacht, 58 ft over-all; 12 ft beam; 7 ft 6 in loaded draft; launch July/25, est; deliver July 10/25, est.
No name, hull 110, same as above.
No name, hull 111, same as above.
No name, hull 112, same as above.
No name, hull 113, same as above.
No name, hull 114, same as above.
No name, hull 115, express cruiser, Clifford Brokaw, 50 ft over-all; 10 ft beam; 3 ft draft; keel Jan 20/25; launch and deliver May/25, est.
No name, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 HP each; keel Jan 20/25; launch and deliver May 25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N. Massachusetts, hull 1400, battleship U.S.N.; to be scrapped.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmington, Del.

Hull 3495, carfloat, Bush Terminal; 275x37-6 x10; keel Sept 10/24; launched Dec 30/24; delivered Jan 14/25.

BETHLEHEM SHIPBUILDING CORPORATION, SPARROWS POINT PLANT Sparrows Point, Md.

Hull 4234, dredge hull, Ellicott Mach. Corp.; keel Jan 14/25.

CHARLESTON DRY DOCK & MACHINERY COMPANY Charleston, S. C.

Purchasing Agent: Charles R. Valk.
Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 LBP; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 HPS; keel Nov/24; launch Feb/25, est; deliver Oct/25, est.
Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 LBP; 33 beam; 2 ft 11 in loaded draft; 1 Scotch boiler, 1 ft 6 in by 12 ft 3 in; keel Feb 10/25, est; launch May/25, est; deliver Dec/25, est.

CLINTON SHIPBUILDING & REPAIR COMPANY Philadelphia, Pa.

No name, hull 45, oil barge, City of Phila.; 88 LBP; 30 beam; 8 loaded draft; keel June /24, est; launch July/24, est; deliver Aug/24, est.

DEFOE BOAT & MOTOR WORKS Bay City, Mich.

Purchasing Agent: G. O. Williams.
C. G. 115-129, inc; 15 patrol boats for U. S. Coast Guard; 75 long; 13-6 beam; 5 delivered.
Hull No. 79, wooden cruiser, E. F. Cooley-Lansing; 42 ft 10 in long; 10 ft beam; 3 ft draft; 12 mi speed; Scripps E-6 gas engs; keel Feb 1/25; deliver June 1/25, est.
Hull No. 80, steel vessel, U. S. Coast Guard; 98 LBP; 23 beam; 6 loaded draft; 210 DWT; 300 HP diesel engs; keel Feb 20/25, est.
Hull No. 81, sister to above.
Hull No. 82, sister to above.
Hull No. 83, sister to above.
Hull No. 84, sister to above.
Hull No. 85, sister to above.
Hull No. 86, sister to above.
Hull No. 87, sister to above.
Hull No. 88, sister to above.
Hull No. 89, sister to above.

DRAVO CONTRACTING COMPANY Pittsburgh, Pa.

Hulls 341-4, 4 sand and gravel barges, builder's account; 135x27x8; 320 gross tons ea.
Hull 352, mixer boat No. 5, owner's account; 150 gross tons.
Hulls 354-375, inc., 22 steel barges for Mississippi River Commission, Memphis; 120 ft by 30 ft by 7 ft 6 in; 430 gross tons each.
Hulls 376-381, inc., 6 steel barges, I. E. Davison & Bros., Pittsburgh; 135 ft by 26 ft by 10 ft; 330 gross tons each.
Hulls 383-394, inc., 16 sand and gravel barges, Keystone Sand & Supply Co.; 135x27-8; 320 gross tons each.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY Kearny, N. J.

Purchasing Agent: R. S. Page.
El Oceano, hull 81, freight stmr. Southern Pa-

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

CAPT. PETERSON NOW BAR PILOT

AS a token of good will and friendship, Captain Charles Peterson, commander of the Matson liner Matsonia since February, 1914, was presented with a handsome clock on February 18 by his shipmates, the officers and crew, just before command of the Matsonia was transferred by Captain Peterson to Captain John T. Diggs, master of the Manoa. Captain Peterson has resigned from the Matson service to accept a position as San Francisco bar pilot, effective March 1. With a splendid record of nearly twenty years of faithful and conscientious service, Captain Peterson is one of the best known and most popular captains on the San Francisco-Hawaiian run. His friends among the traveling public are numbered by thousands. Captain Peterson began service with the Matson Navigation Company on October 5, 1905, as third mate of the Matson steamer Hilonian, one of the late Captain Matson's first vessels. He made his first trip as acting commander in 1908, and became permanent master of the Hilonian on February 23, 1911. In 1912 Captain Peterson was appointed commander of the Wilhelmina, and in 1914 became master of the Matsonia, on that ship's second voyage. He stayed on the Matsonia until October, 1917, when the vessel was taken over for use as a war transport. During the war Captain Peterson commanded the Lurline, running to the Philippines and Orient. He brought the Matsonia back from New York in 1919, after her return from war service. When his line operated the Hawkeye State and Buckeye State in the Baltimore-San Francisco-Hawaiian run, Captain Peterson had the Hawkeye State from February 15, 1921, to January, 1922, when he came back to the Matsonia.

JOHNSON LINE ADDS TO FLEET

Two diesel passenger and freight vessels are being built at Kokum's yard, Sweden, for the Johnson Line's Pacific Coast-European service. The first vessel will arrive on the Pacific Coast in June and second vessel in September. These two vessels will be equipped with Gotaverken-Burmeister & Wain engines.



Captain Asa Davison
joins E. F. C.

FLEET HEAD

Captain Asa Davison, who recently resigned as marine superintendent of the United Fruit Company, has been appointed vice-president of the Emergency Fleet Corporation in charge of operations. Captain Davison has followed the sea since he was fifteen years old. During the war he operated fruit vessels that were under the control of the British Admiralty. His activities kept him in constant touch with the British Ministry of Shipping in London, and his war service was regarded as a most valuable contribution to the allied cause.

L. A. HARBOR

The Los Angeles Harbor Department has moved its offices to a new location at 1017 South Figueroa Street.

ADMIRAL LINE ALASKAN TRADE

The Pacific Steamship Company has announced that the first sailing on the spring schedule for Alaska out of Seattle will be on the steamer Queen for Southeastern Alaska on March 18. The Admiral Rogers will follow seven days later, on March 25, and this weekly schedule will be kept up through the season. On the Southwestern Alaska route there will be a sailing every fourteen days, beginning with the Admiral Watson, leaving Seattle March 24, followed by the Admiral Evans on April 7. The Pacific Steamship Company maintains a winter schedule of every two weeks to Southeastern Alaska and every twenty-eight days to Southwestern Alaska. The company reports that reservations are already being made for the summer and the number of tourists will exceed last year's figures by about 50 per cent.

NEW COASTAL LINE

A new passenger and freight service was inaugurated between San Francisco and Los Angeles by John Chapman during January, who purchased the steamer Newport from the Pacific Mail Steamship Company. The vessel is 340 feet long, has passenger accommodations for 125, and freight capacity of 2000 tons, as well as refrigerated space. The new service is operated under the name of the Los Angeles Dispatch Line. E. N. Tormey has been appointed agent at Los Angeles.

NEW FIRM

Walter C. Bryant, formerly with the Marine Supply Company at Seattle, has organized a ship chandlery firm of his own, under the name of W. C. Bryant & Company, 74 Marion Street, Seattle. George E. Hall and D. B. Conrad are associated in the new firm.

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J. R. Fitzgerald, agent.
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SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT.

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Regular sailings between San Francisco, Seattle, Vancouver, B. C., Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corp., agents.
240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Kearny 5100.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland,

Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 23 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.

311 California street. Phone Garfield 6760.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

F. C. Bennett, Pacific Coast manager.

110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.

Mutual Life Building.

FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

U. A. L. OFFICES

To meet the increasing demand of passenger traffic to Europe, the United American Lines, who operate a joint service across the Atlantic with the Hamburg-American Line, has opened two new offices, one in Boston and one in Philadelphia. The Boston office, in charge of Daniel J. Harkins, is at 131 State Street; the Philadelphia office, in charge of Peter Kreckmann, is at 230 South Fifteenth Street.

SEATTLE POST

R. M. Semmes, general manager of the East Waterway Dock & Warehouse Company, Seattle, was recently elected president of the Merchants' Exchange of Seattle.

MONGOLIA IN INTERCOASTAL RUN

The steamer Kroonland of the Panama-Pacific Line sailed from Los Angeles Harbor for New York on February 2, closing her service in the intercoastal trade. She will be replaced by the Mongolia, which sailed from New York for California after being reconditioned at a cost of \$100,000. The need for greater tonnage was the reason for retiring the Kroonland in favor of the Mongolia.

G. A. RENTSCHLER

At a recent meeting of the board of directors of the Hooven, Owens, Rentschler Company, G. A. Rentschler was made president of the company. Gordon S. Rentschler was made vice-president.

FRENCH LINE

Another new vessel for the Pacific Coast-European service is now loading at Antwerp. This is the French freighter Arizona built at Sunderland, England. She is of 8800 dead-weight tons and a sister ship to the freighters Zenon and Alaska.



Coast-to-Coast Service

Between San Francisco, Los Angeles and
New York Via Panama Canal ----

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S. S. COLOMBIA—Sails	MAR. 19	S. S. ECUADOR—Sails	APR. 1
S. S. VENEZUELA—Sails	APR. 9	S. S. COLOMBIA—Sails	APR. 22
EVERY 23 DAYS THEREAFTER			

Additional Freight Service—NEW YORK, BALTIMORE, PHILADELPHIA, NORFOLK, LOS ANGELES, OAKLAND, SAN FRANCISCO & PUGET SOUND.

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S. S. SANTA PAULA—Sails MAR. 26
S. S. SANTA OLIVA—Sails APR. 9

From New York to Los Angeles, San Francisco, Portland and Seattle

S. S. SANTA ROSA—Sails MAR. 24
S. S. SANTA MALTA—Sails APR. 7

PANAMA SERVICE—Passengers and Freight—from San Francisco to Mexico, Central America and Canal Zone
MS. CITY OF SAN FRANCISCO—Sails MAR. 24 A Leisure Cruise with stops at various Foreign Ports for Sightseeing Purposes
AND APPROXIMATELY EVERY 21 DAYS THEREAFTER

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Freight Office: 605 CENTRAL BLDG.
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FAST FREIGHT STEAMERS

INTERCOASTAL

Philadelphia, Baltimore, New York, Boston, Portland, Me., Norfolk, Los Angeles, San Francisco, Seattle, Vancouver, B. C.

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Los Angeles, San Francisco, Seattle, Vancouver, B. C., Yokohama, Kobe, Shanghai, Hongkong, Manila.

ROUND-THE-WORLD

San Francisco, Yokohama, Kobe, Shanghai, Hongkong, Manila, Batavia, Sourabaya, Samarang, Singapore, Penang, Colombo, Suez, Port Said, Genoa, Marseilles, Boston, New York, Los Angeles.

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433 California St.—Sutter 6717

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SHIPPING — IMPORT — EXPORT

INTERCOASTAL

SAILINGS—Every 10 days between Seattle, Portland, San Francisco and Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

DOLLAR STEAMSHIP LINE

Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.
Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4 Central. Phone Elliott 6383.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger Office, 619 Second avenue.
Pacific Steamship Company, agents.
L. C. Smith Building. Phone Elliott 2068.
SAILINGS—Intercoastal.
Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

N. O. Beggs, agent.
4421 White Building. Phone Elliott 6127.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.
Arctic Club Building.
FREIGHT ONLY.
SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane street terminal. Phone Elliott 6657.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.
Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.
SAILINGS—Intercoastal Service.
Sailings between Los Angeles, San Francisco, Seattle, Vancouver, B. C., New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
541 South Spring street.
FREIGHT ONLY.
SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.
208 West Eighth street. Phone Main 808.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.
Every 19 days from Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
Lane Mortgage Bldg. Phone Metropolitan 6140.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.
Freight Offices: 108 West Sixth street.
SAILINGS—Passengers and Freight.

Every 23 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.
Every 14 days. Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
703 Transportation Bldg. Phone VAndyke 4659.
FREIGHT ONLY.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company.

SCRAP WORK

Moore Dry Dock Company on the Oakland estuary is now scrapping the United States Navy battleships Nebraska and Vermont. The dismantling of these vessels is part of the disarmament stipulation. The Moore Dry Dock Company is building a barge for the Union Oil Company of California. Pacific Marine Review will publish a description of this job in March issue.

O. S. K. CHANGE

After representing the Osaka Shosen Kaisha in Seattle for the last seventeen years, W. C. Dawson & Company will relinquish the agency April 14, the steamship company opening their own offices at 687 Dexter Horton Building. W. C. Dawson & Company announce they will continue in the general steamship agency and stevedoring business as in the past, with offices in the Mutual Life Building.

CAPTAIN EDWARDS DIES AT PORTLAND

Captain Edward S. Edwards, inspector of hulls and boilers for the Oregon district, passed away at Portland on January 15. Captain Edwards has been inspector since 1889 and was one of the best known men in Portland marine circles.

HOLLAND-AMERICAN

Additional refrigeration has been ordered on three steamers of the Holland-American and the Royal Mail Steam Packet lines to care for Pacific Coast perishable freight to Northern Europe. The vessels to be so equipped are the Lochkatrine, Lockgoil, and the Lochmonar.

GARLAND LINE

The Garland Line, in connection with its new service from Philadelphia and Camden to the Pacific Coast, has opened an office in the Bourse Building, Philadelphia. Service will be continued from Pier 25, north, on the Philadelphia side and also at the Camden terminal, foot of Spruce Street.

U. S. S. B. SALES

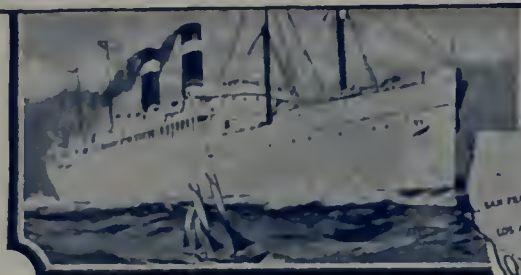
The Shipping Board has undertaken a campaign to stimulate the sale of all Lake-type vessels to American buyers, substantial price reductions having been made effective. The Board has approximately 325 Lake-built vessels.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.
Transportation Bldg. Phone 821-336.
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THE NEW WAY EAST



Fast Service to New York via Panama Canal and Havana

Regular Dependable Coast to Coast Passenger and Freight Service
New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, Tacoma

WESTBOUND

From New York, Pier 61, N. River

FINLAND	Mar. 12
MANCHURIA	April 2
MONGOLIA	April 16
FINLAND	April 30
MANCHURIA	May 21

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.

MANCHURIA	Mar. 7	Mar. 9
MONGOLIA	Mar. 21	Mar. 23
FINLAND	April 4	April 6
MANCHURIA	April 25	April 27
MONGOLIA	May 9	May 11

Direct connections at New York and thru Bills of lading issued via: American Line to HAMBURG, Red Star Line to ANTWERP, Atlantic Transport Line to LONDON, White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

PANAMA PACIFIC LINE

INTERNATIONAL MERCANTILE MARINE COMPANY

Passenger Offices:

L. E. ARCHER—Pacific Coast Manager

SAN FRANCISCO
460 Market St.

SEATTLE
619 Second Ave.

LOS ANGELES
510 South Spring St.

PACIFIC STEAMSHIP CO. (The Admiral Line),
SAN FRANCISCO
60 California St.

LOS ANGELES
322 Citizens National Bank

SEATTLE
L. C. Smith Bldg.

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San Francisco Office

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Telephone: Sutter 3414

INTERCOASTAL

322 Citizens National Bank.
Passenger Offices: 510 So. Spring st. Phone 877-511.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
A. G. Bartlett Bldg. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
Railway Exchange Building.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.
Yeon Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 14 days. Eastward calls: San Francisco, Los Angeles, Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland, and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
1008 Spalding Building.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.
Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Halifax. Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.
402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.
Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Galveston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

Kingsley Navigation Company, Ltd.
602 Pacific Building. Phone Seymour 9506.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco and North Pacific Coast ports.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports. San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports.

WORLD MEET

The third general meeting of the International Chamber of Commerce will be held in Brussels, Belgium, June 21 to 28, 1925. Pacific Coast organizations plan to be represented at this conclave.

BRANDT PROMOTED

Harry Brandt, general agent for the United States Lines in the Pacific Northwest and Alaska, was recently given a noteworthy promotion. His territory was enlarged to include California, north of Santa Barbara, and Nevada, as well as his former territory, covering Washington, Oregon, Idaho, British Columbia, and Alaska. Brandt's headquarters are now in San Francisco. Claude E. Pike will have charge of the offices at Seattle.

MATSON LINE

The Matson Navigation Company has inaugurated a fortnightly sailing schedule from Seattle to Hawaii, the freighters to engage in the triangular run, returning via San Francisco. Alexander & Baldwin are Seattle agents for the company.

CORNBROOKS NEWPORT NEWS

E. I. Cornbrooks has been appointed sales manager of the Newport News Shipbuilding & Drydock Company, succeeding Benjamin G. Gernald, who resigned on account of ill health. Cornbrooks has been connected with this firm for nearly twenty years as chief draftsman in the hull department and later as superintendent of hull construction and superintendent of construction. During his long experience with the company Cornbrooks has shared in the construction of some of the largest and finest naval and merchant vessels now afloat.

LYNN B. EASTON

Worthington Pump & Machinery Corporation announces the death of Lynn B. Easton, manager of the Laidlaw works, ending a remarkable career as the chief executive. Mr. Easton started with the Laidlaw plant twenty years ago as a time-keeper. President C. P. Coleman of the Worthington organization has issued a glowing tribute to Mr. Easton, expressing the sorrow of the entire personnel.

NORTON, LILLY & COMPANY

GENERAL AGENTS, PACIFIC COAST

ISTHMIAN STEAMSHIP LINES (Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transshipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR (Pacific-Mediterranean Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

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Power Schooner
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Power Schooner
"ADVENTURESS" 15
Power Schooner
"GRACIE S" 3
Sailing Schooner
"AMERICA" 11



ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels.)
112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CALIFORNIA ORIENT LINE

Pacific Mail Steamship Co., managing operators.

508 California street. Phone Sutter 3800.

(Operating U. S. S. B. vessels.)

PASSENGERS AND FREIGHT.

SAILINGS—Trans-Pacific Service.

Every 14 days from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—Hongkong-India (Freight Only.)
Connection at Hongkong every 2 weeks for India ports.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.

Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Fortnightly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.
Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OSAKA SHOSEN KAISHA

McCormick & McPherson, Agents.

503 Market street. Phone Kearny 2632.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

549-51 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service

and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

222 Robert Dollar Bldg. Phone Garfield 3399.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.

Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

American Bank Building. Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

W. C. Dawson & Company, agents.

Mutual Life Building. Phone Elliott 0842.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.

CLAIM AGENT

G. H. Dickard, formerly with the Luckenbach Steamship Company, San Francisco, has been appointed claim agent at the Los Angeles office.

RADIO TESTS

According to word from the press aid department of the United States Lines, Captain Harold Cunningham will have an interesting report to make concerning the efficiency of the huge radio broadcasting receiving set which was installed on board the liner George Washington. One of the plans is to provide concerts from shore stations to passengers aboard ship.

GRAYS HARBOR

Drew Chidester, vice-president of the General Steamship Corporation, announces the opening of a shipping agency at Grays Harbor. Thomas H. Lathe, Oriental traffic manager of the firm, will manage the new office. The purposes of the Grays Harbor office, according to Mr. Chidester, are to direct the company's extensive operations at that port and to act as representative for other lines calling at that port.

AMERICAN-HAWAIIAN OAKLAND OFFICE

J. R. Fitzgerald, San Francisco freight agent of the American-Hawaiian Steamship Company, announces the opening of offices in Oakland on March 1. The purpose is to have a direct service for shippers. Charles L. Gibb will be in charge of the new office, which will be located in the Tribune Tower. Mr. Fitzgerald further announces that the company would use the new facilities of the Encinal Terminal Company at Alameda on traffic for the district served by the terminal. The constantly increasing East-bay industrial district was the reason influencing the establishment of an American-Hawaiian office in Oakland.

FURNESS, WITHY

R. E. Burnett, vice-president of Furness, Withy & Company, recently arrived in Vancouver from London, beginning an inspection of the leading Pacific Coast ports. T. A. Lee, president of Furness (Pacific), Ltd., is accompanying Mr. Burnett on the tour.

United States Government Combination Freight and Passenger Services From Pacific Ports

American Oriental Mail Line

Trans Pacific Service from Seattle to
Yokohama, Kobe, Shanghai, Hong Kong, Manila.

A sailing every twelve days by one of the five great ships

PRESIDENT JACKSON

PRESIDENT JEFFERSON

PRESIDENT MADISON

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PRESIDENT McKINLEY

Fastest Service across the Pacific from the United States

Direct Freighter Service

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Two sailings a month

Also regular sailings direct to

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SEATTLE, WASH.

California Orient Line

Trans Pacific Service from San Francisco to
Honolulu, Yokohama, Kobe, Shanghai, Hong Kong, Manila

A sailing every fourteen days by one of the great President ships

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PRESIDENT WILSON

PRESIDENT LINCOLN

PRESIDENT CLEVELAND

United States Government vessels, oil burning, 535 feet long, 21,000 displacement tons.

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United States Shipping Board Fleet Corporation

ORIENTAL

412 Union Oil Bldg. Phone Broadway 7900
and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama,
Kobe, Shanghai, North China, ports, re-
turning via Los Angeles and San Fran-
cisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Fortnightly from Los Angeles and
San Francisco to Honolulu, Kobe, Shang-
hai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San
Francisco, and Yokohama, Kobe, Shanghai,
Hongkong, Manila, Singapore, Sourabaya,
Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick, McPherson & Lapham, agents.
Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yo-
kohama, Yokkaichi, Nagasaki, Hongkong,
Saigon, Singapore, Colombo, Durban and
Cape Town. These vessels are operating in
round-the-world service and on their home-
bound trip call at Santos, Buenos Aires,
Rio de Janeiro, New Orleans, Panama Can-
al and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.

541 So. Spring street.

FREIGHT ONLY.

SAILINGS—At frequent intervals from San
Francisco and Los Angeles to Yokohama,
Kobe, Shanghai, Hongkong and other
Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via
San Francisco on steamers of Japan,
Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via
San Francisco on steamers from West
Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service
and Oriental-New York via Panama Canal.

PORTLAND

AMERICAN ORIENTAL SERVICE

A. M. Gillespie, Inc., agent.

Board of Trade Bldg. Phone Broadway 4348.

SAILINGS—Monthly to ports of Japan and
China as inducements offer.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

702 Wilcox Building. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to
Portland and North Pacific ports, thence
to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)

Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to
Orient, calling at Yokohama, Kobe, Shang-
hai, Taku Bar and Dairen.
Every two weeks from Portland to Yoko-
hama, Kobe, Hongkong and Manila.

PORTLAND-ORIENT LINE

Wallem & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama,

Kobe, Shanghai, Tsingtao, Taku Bar, Dai-
ren, Vladivostok.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

203-4 Wilcox Building. Phone Bdwy. 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Ori-
ental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service
and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO
KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound
and Portland to Yokohama and Kobe and
irregular service from China and Japan ports
to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver,
Victoria, and Seattle to Yokohama, Kobe,
Hongkong, and Manila.

CANADIAN GOVERNMENT MER-
CHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama,
Kobe, Shanghai, North China ports,
returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS,
LTD.

Canadian Pacific Railway Station. Phone Sey-
mour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver
to Japanese ports, Shanghai, Hongkong,
and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancou-
ver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in
Japan and China, also Vladivostok, Singa-
pore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific
Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama,
Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO
KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama,
Kobe, Osaka and Nagoya.

UNITED FRUIT

Victor M. Cutter, president of the
United Fruit Company, in his an-
nual report to stockholders for the
year ending December 31, 1924, set
forth the following statement of
holdings: Under American registry
23 ships, with a total gross tonnage
of 100,874; under British registry,
33, with a total gross tonnage of
157,412; under Honduras registry,
one of 2012 gross tons; chartered
from other countries, 17, with a
total gross tonnage of 25,430. Total,
74 ships, aggregating 285,828 gross
tons.

STOREY PROMOTED

David Storey, formerly traffic man-
ager of W. R. Grace & Company, in
Seattle, has been appointed general
agent of the Chicago Great Western
Railroad in Seattle. Storey succeeds
E. E. Harold, resigned. For the
past three years Storey served as
traffic agent for the railroad. He
was contracting freight agent for
the Union Pacific System at Seattle
for seven years.

TRIBUTE TO DAILY

The marine committee of the San
Francisco Chamber of Commerce, of
which John C. Rohlfis is chairman,
has decided to honor the memory of
the late Jerry Daily, for many years
manager of the marine department
of the Chamber of Commerce, by
renaming the launch "B436", prop-
erty of the marine department, "Jer-
ry Daily." The launch, which is
used for boarding incoming vessels,
now has the name on the bow.

PORT ENGINEER

W. J. Murphy, well known as as-
sistant engineer of the Port of Grays
Harbor, has been retained as port
engineer by the Port Angeles Port
Commission.

NORTON-LILLY
AT PANAMA CANAL

W. J. Edwards, general manager
of Norton, Lilly & Company, an-
nounces the opening of a branch
office at Cristobal, Canal Zone, un-
der the management of H. W. Deas,
formerly manager of the firm's San
Diego office. The Cristobal office
will handle the company's own ex-
tensive business at the Panama Can-
al and also act as agent for other
lines. Mr. Deas, the Cristobal agent,
served four years at San Diego.

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual

Steam Navigation Company, Ltd

Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pa-
cific ports, San Francisco and Los Ange-
les to London, Liverpool and Glasgow.

BLUE STAR LINE

The Robert Dollar Co., agents.

311 California St. Phone Garfield 4300.

REFRIGERATOR AND GENERAL CARGO.

SAILINGS—Every 21 days from Vancouver,
Seattle, Portland, and San Francisco
to Glasgow, Liverpool, Southampton and
London.

CANADIAN GOVERNMENT MER-
CHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp,
Rotterdam.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

433 California street. Phone Sutter 6717.

PASSENGERS AND FREIGHT.

JOHNSON LINE

DIRECT FREIGHT AND PASSENGER SERVICE

TO AND FROM

PACIFIC COAST PORTS --- SCANDINAVIAN PORTS

Hamburg and Other European Ports as Inducements Offer

THROUGH BILLS LADING ISSUED TO ALL SCANDINAVIAN, FINNISH & BALTIC PORTS

MONTHLY SAILINGS

VESSELS CALL AT ANTWERP OUTWARD FROM EUROPE

GRACE LINE

EXPRESS FREIGHT AND PASSENGER SERVICE TO AND FROM

WEST COAST SOUTH AMERICA

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General Agents Pacific Coast
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San Fernando Bldg.

PORTLAND
LIDELL & CLARKE

SEATTLE
W. R. GRACE & CO., Agts.
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VANCOUVER, B. C.
C. GARDNER JOHNSON, Agt.

\$1200 *First Class* \$1200

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SAN FRANCISCO (or LOS ANGELES, PORTLAND OR SEATTLE), HONOLULU, SAMOA, SYDNEY, AUSTRALIA, JAVA, SINGAPORE, PENANG, COLOMBO, SUEZ, PT. SAID, ALEXANDRIA, NAPLES, GENOA, MARSEILLES, (LONDON \$35.00 Extra Rail), NEW YORK and Choice of Railways Across U. S. Stop-overs.

Oceanic S. S. Co.'s sailings: Ventura, April 8; Sonoma, May 6; Ventura June 10, July 8, August 12, etc. Transshipping at Sydney to favorite Java lines to Singapore; from Singapore splendid Government built steamers of Dollar Line to Marseilles or New York. \$140 extra via Panama Canal.
Standard Service Throughout

Honolulu, \$220 Round Trip, First Class
Sydney and Return, \$565

Book Now!

OCEANIC STEAMSHIP CO.

2 PINE STREET SAN FRANCISCO

Canadian-Australasian Royal Mail Line

TO
Honolulu, T. H. Suva, Fiji
New Zealand Australia

The Large and Modern Steamers
R. M. S. NIAGARA R. M. S. MAKURA
20,000 Tons Dis. 13,500 Tons Dis.

Sail from VANCOUVER, B. C.,
every 28 days

Cargo Service

Monthly sailings from Vancouver to main New Zealand ports, also to Sydney, Melbourne and Adelaide, Australia, are maintained by the following up-to-date cargo steamers:

M. S. HAURAKI S. S. WAIOTAPU
S. S. WAIKAWA S. S. WAIHEMO

For Fares, Rates and Sailings apply to
any office of the

CANADIAN PACIFIC RAILWAY CO. and
all RAILWAY AND STEAMSHIP AGENTS

OR TO
**CANADIAN - AUSTRALASIAN
ROYAL MAIL LINE**

741 Hastings St., West VANCOUVER, B. C.

UNITED KINGDOM---CONTINENTAL EUROPE

SAILINGS—Regular service, Pacific Coast ports, direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Service between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, sub-agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

Furness, Withy & Company, Ltd.
Furness (Pacific), Ltd.
710 Balfour Building. Phone Sutter 6478-6479.
PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.
SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
351 California street. Phone Sutter 6427.
FREIGHT ONLY.
SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, agents.
260 California street. Phone Douglas 8040-1-2.
FREIGHT ONLY.
SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Co., general agents.
332 Pine street. Phone Sutter 3700.
PASSENGERS AND FREIGHT.
SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenburg, Malmö, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)
401 Market street. Phone Douglas 7510.
PASSENGERS AND FREIGHT.
SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.
FREIGHT ONLY.
SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.
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SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.
For passengers, Phone Sutter 46.
PASSENGERS AND FREIGHT.
SAILINGS—North Pacific-European Service. Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

SEATTLE

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.
Stuart Building. Phone Elliott 0147.
PASSENGERS AND FREIGHT.
SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

BLUE STAR LINE

Admiral Oriental Line, agents.
L. C. Smith Bldg. Phone Elliott 0974.
REFRIGERATOR AND GENERAL CARGO.
SAILINGS—Every 21 days from Vancouver, Seattle, Portland, San Francisco to Glasgow, Liverpool, Southampton, and London.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.
823 Alaska Building. Phone Elliott 9104.
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SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.
SAILINGS—Service between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.
SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)
Furness (Pacific), Ltd.
Burchard & Fisker, agents, 705 Arctic Bldg.
PASSENGERS AND FREIGHT.
SAILINGS—Fortnightly from Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports as inducements offer.

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.
SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
Stuart Building. Phone Elliott 1464.
FREIGHT ONLY.
SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.
SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Company.
Hoge Building. Phone Elliott 5412.
PASSENGERS AND FREIGHT.
SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenburg, Malmö, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)
204-206 Rainier Building. Phone Elliott 4944.
PASSENGERS AND FREIGHT.
SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

TRAVEL OFFICES

Captain B. Aillet, Pacific Coast representative of the French Line, announces the opening of passenger offices in San Francisco and Los Angeles for the convenience of prospective travelers. Felix Lachesnez, associate general passenger agent of the company at New York, was recently in California to confer with Captain Aillet.

SCOTT VALVE

O. L. Chapman has joined the sales department of the Scott Valve Manufacturing Company of Detroit. Mr. Chapman, widely known in manufacturing lines, will devote his time to the application of valves to plants in many industries.

B. C. SERVICE

Officials of the McCormick Steamship Company announce a direct sailing every six weeks from Los Angeles harbor to British Columbia ports by the Kingsley Navigation Company, for which the McCormick organization is California agent. Freight will be booked for Victoria and Vancouver, B. C., and inland Canadian points via the Canadian Pacific.

TODD DRY DOCKS, INC.

Todd Dry Docks, Inc., Seattle, recently repaired the "535"-type liners President McKinley, President Jackson and President Grant. These are three of the five Shipping Board passenger and freight liners operated by the Admiral Oriental Line between Seattle and Asia. The President Jefferson re-enters service on February 8 and the President Grant will sail on February 20. This is the first extensive overhaul of the fleet since the inception of service.

In the old days it was risky to go from anchored ship to dock or shore by the Whitehall boat. It was also pretty expensive to hire a steam tug. Nowadays there is always a staunch little workboat ready and able to do the trick, and it is not so expensive either. Neither is it dangerous, as any sea or wind that will stop them is pretty sure to be heavy enough to require all hands to stay on board. And they can take the captain or men on board in heavy weather, too, with less bother than the older way.



HAWAII

Isles of Enchanted Moonlight

"Moonlight swimming in Hawaii is the most wonderful of all," writes Agnes Mayo James in *Vogue*. "Arms drip with pearls and glow with phosphorescent light. A beach party with a glamorous moon overhead and sandwiches toasting in a driftwood fire promises a thrill to the most sophisticated. . . ."

"When the white moon rides high, the best bridge parties in the hotel can't keep one indoors. Polished fronds of palms reflect radiance, their shadows raggedy black on the lawn. On a low seawall, a group of music boys settle. They finger purring ukuleles, and a steel guitar cries straight to the heart.

"In Nuuanu Valley is the country club, set where the harbor forms a charming view. Every month, a dance there marks the occasion of the full moon. It is said that the old Hawaiians devoted the night of full moon to feasting and dancing. That spirit still pervades the islands."

See HAWAII this spring! Matson Line inclusive (all-expense) 21-day tours, with eight in the islands, range from \$267 to \$381, each person. Fare only, \$90 and \$110 up, each way, per person. Let us plan your trip.



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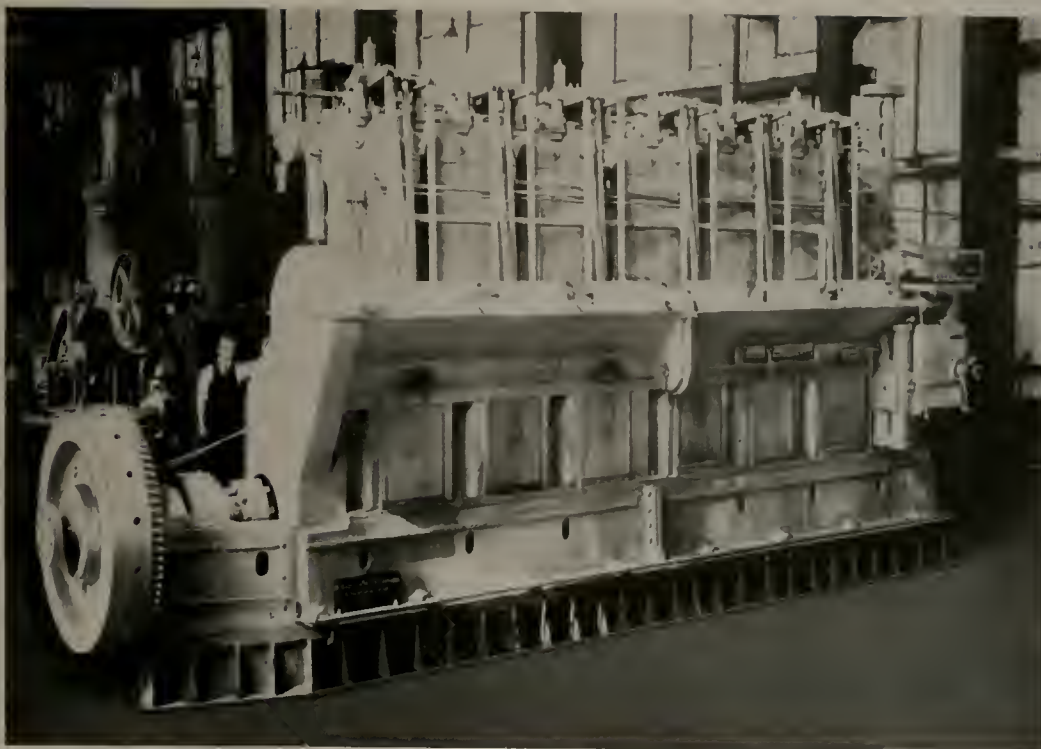
For Passenger Information Address:

517 S. Spring St., Los Angeles
685 Market St., San Francisco

For Freight Information Address:

304 Central Bldg., Los Angeles
Pier 7, San Francisco

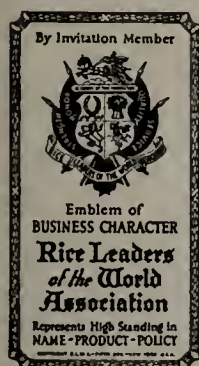




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Send for bulletin No. 70, which gives further details.



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FEDERAL TELEGRAPH COMPANY

SAN FRANCISCO

25 BEAVER STREET, NEW YORK CITY

Japan - China Representatives:
Sperry Gyroscope Co., Mitsui Building, Tokio



(Continued from page 139)

of 677 vessels, distinction is made between that portion of the fleet employed in overseas foreign commerce and that engaged in traffic with near-by countries in the Caribbean region, and Canada. In overseas foreign service there were 39 passenger ships, 380 freighters and 55 tankers, a total of 474 vessels. Of this number 20 passenger carriers, 318 freighters and 4 tankers were government owned. In the near-by foreign service there were 38 passenger ships, 66 freighters and 99 tankers, a total of 203 vessels; of which number 3 passenger ships, 2 freighters, and 1 tanker were government owned.

In the domestic coastwise service 622 vessels were employed; 97 passenger carriers, 357 freighters and 158 tankers, all privately owned, and 10 government owned tankers.

The privately owned American merchant fleet includes 1074 steam and motor vessels of 1000 gross tons and over, with an aggregate gross tonnage of 5,059,081 tons. Of this total 941 vessels, of 4,641,935 gross tons, were in active service on January 1st. The inactive vessels aggregate 417,146 gross tons, about 8 per cent of the total tonnage.

The government-owned fleet consisted, on January 1, of 1243 vessels of 6,109,308 gross tons. Of this number 358 vessels of 2,305,605 gross tons were in active service and 885 or about 71 per cent inactive.

Differential Abolished

The decision of the Shipping Board, abolishing the differential between North Atlantic and Gulf ports, has put Asiatic shipping interests in an attitude of expectancy awaiting the next move. What this will be no one knows. Some operators regard the decision largely as a gesture intended to convince the public that the Shipping Board will not permit foreign interests to control, through the North Atlantic Conference, the flow of commerce from the United States. Others are disposed to regard it as a move to clear the way for a more general consideration of the whole merchant marine problem, ports, differentials, and railroad rates included. It is asserted by competent authority that the decision will be of no benefit to the Gulf and might be of disadvantage. There appears to be no next move in immediate prospect to adjust the situation that has resulted from the abolition of the differential agreement.

Intercoastal Disturbances

Disturbed conditions still prevail in the intercoastal trade and there are hints of further rate revisions at the next meeting of the conference. The revisions, it is indicated, will apply to certain commodities, of which, it is held by some of the conference line officials, the outside lines are getting more than their proper share.

The policy of secrecy recently adopted by the conference has brought about a feeling of nervousness throughout the trade. Conference and non-conference officials appear to be equally affected and the feeling also is shared by shippers. On account of the upward tendency in fuel oil prices there is considerable opposition in the conference to the idea of rate reductions, but lack of unity on this point has enabled the dominant interests to force their own ideas upon the others.

Opponents of the rate cutting policy point out that current business conditions afford small hope that lower rates will bring any increase of traffic such as was brought about during the last rate war. The recent advance in fuel oil prices is cited as another reason why shipping companies should be reluctant to

risk any decrease in revenues. None of the non-conference lines, it is further stated, with the exception of one, has been getting any great volume of business, so that there is little apparent reason for any jealousy on the part of the conference lines.

Canadian Government Marine

Although officials of the trans-Atlantic steamship lines are unwilling to discuss for publication the agitation now going on in Canada for the establishment of a subsidized steamship line for the purpose of bringing down both passenger and freight rates, it is known that the Canadian project is causing considerable anxiety on the part of the conference lines. It has been pointed out on behalf of the lines that the Canadian companies have equal representation with the other lines and that under the unanimous consent rule Canadian representatives have had it in their power to block the adoption of any unreasonable or unfavorable rate policy.

It is also asserted that by reason of the great increases in costs of operation since the beginning of the World War the present freight rates and passenger fares leave a very small margin of profit, and this has been still further reduced by the heavy loss in third-class business, although there is still a fairly large volume of this class of traffic on the lines running to Canadian ports. These contentions of the conference lines, however, meet with flat contradictions in the report submitted to the Dominion government by W. T. R. Preston, who was appointed to investigate the alleged steamship combine in the North Atlantic.

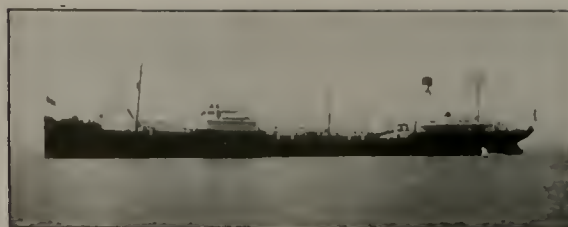
The Preston report asserts that a combine does exist among the lines running between the United Kingdom and Continent and Canadian ports. This group, it is added, is interlocked with other lines plying between Europe and South America, South Africa, India, Australia, and New Zealand, and it is further added that British interests have a predominating influence not only in the North Atlantic but in all the other services and that every influence is exerted to prevent freight carried by the railways in any other countries mentioned being carried overseas in steamships or other vessels not under the control of the combine. Penalties to bring this about may take the form of either delay or increased rates.

Canada's export outlets on both the Atlantic and the Pacific, it is declared, are practically controlled by the combine, so that development of foreign trade is seriously retarded. It is also claimed that tramp steamer operations are handicapped by the discrimination against the ports of Quebec and Montreal in the matter of marine insurance as compared with the United States Atlantic ports. Increases in freight rates to and from Canadian ports, the report says, have been greater than in the case of any of the other British self-governing dependencies, the increases in the case of Canada ranging as high as 700 per cent above pre-war rates as against 50 to 100 per cent in the case of South Africa.

Shipbuilders' Meeting

At the regular monthly meeting, on February 9, of the administrative council of the Atlantic Coast Shipbuilders' Association, the principal subject of discussion was the pending and prospective legislation for the upbuilding of the merchant marine. A resolution was adopted commending the report of the special shipping committee appointed by President Coolidge. In the resolution the thought was expressed that the

(Continued on page 43)



Union Oil Tanker "LA BREA"

Point to Point Service

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Radiograms to and from ships equipped with Federal C-W marine sets are handled over our *own lines of communication* by a thoroughly efficient, radio trained organization. The responsibility for accuracy—for speed—for delivery—rests with *one* company. Think of the money saved because of the reduction of land line and cable tolls.

The service that follows the installation of each Federal marine set is worth thinking about, too. For a low rental which covers the installation complete we maintain the equipment in first class condition, assign radio operators, handle all accounts and licensing—in short, shoulder *all* your radio responsibilities.

Federal service stations are now maintained at San Francisco, Los Angeles, Portland, Seattle, New York and other ports.

Further details—gladly!

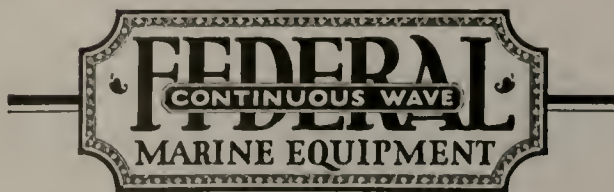


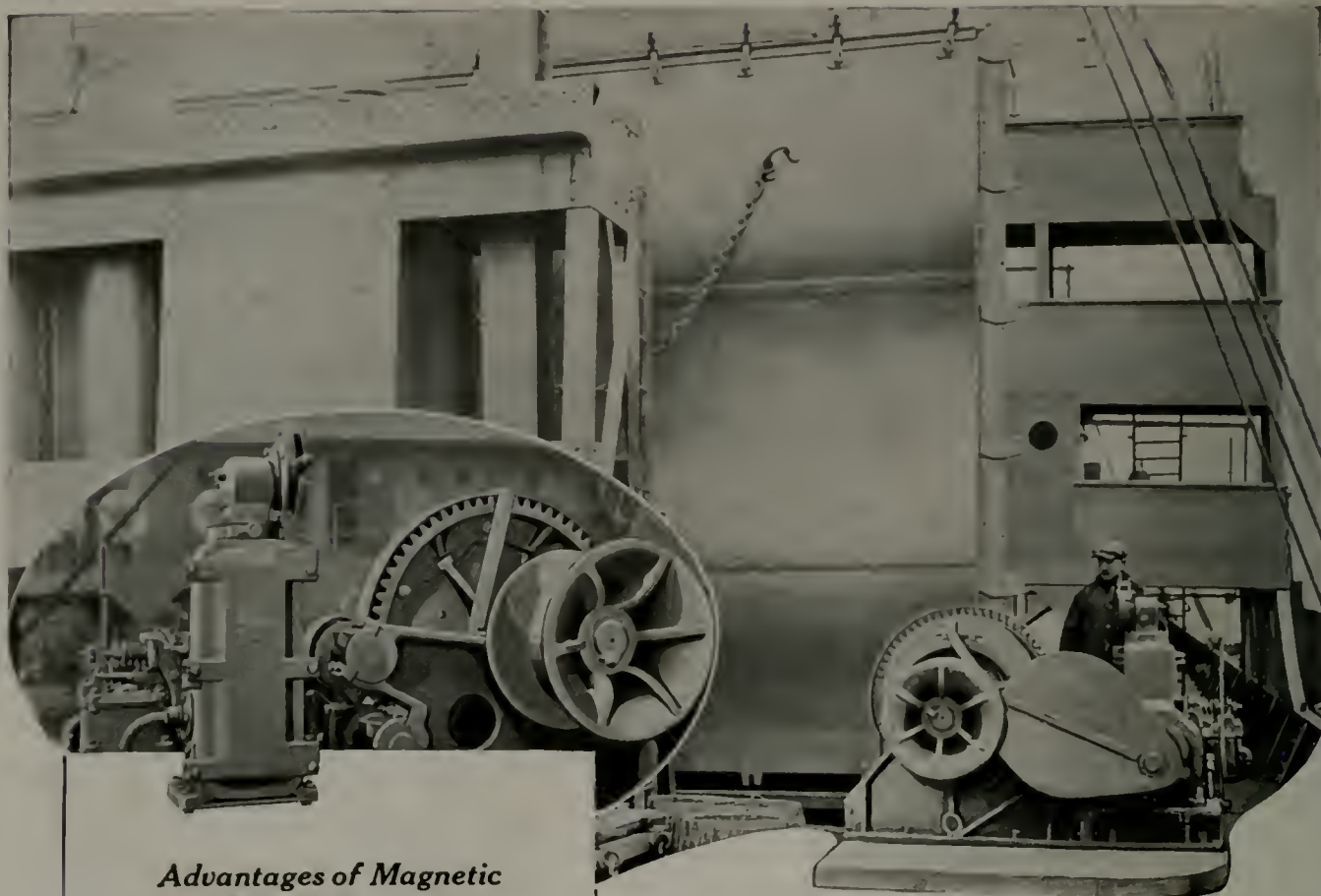
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Todd Mechanical Atomizing Fuel Oil Burner

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PORTS OF THE PACIFIC

Around Pacific's rim there is universal activity in port development and harbor improvement. Space will not permit detailed description of the various projects which the growth of commerce on the Pacific is engendering, so we are listing in skeleton form some of the important ones:

Among the harbor improvement projects pending in Australia are the following:

Selection of Port Stevens, N. S. W., for harbor development by Australian firm with capital of 3,000,000 pounds. Further information from Reference, Australia, 142677, U. S. Bureau of Foreign and Domestic Commerce.

Brisbane, Queensland, plans a shipping basin and wharves to cost about \$3,735,000.

Melbourne, Victoria, is constructing docks to involve a total expenditure of several millions of pounds.

The West Coast of South America, within the next few years, will see a great improvement in port facilities. Some of the projects under way or under consideration are:

Columbia. A annual expenditure of \$100,000 has been voted by the Colombian Senate for extension of existing wharf at **Buenaventura** and \$50,000 annually for other harbor improvements. Improvements include cargo handling machinery. Reference, Colombia No. 152173, Bureau of Foreign and Domestic Commerce.

Chile. The Commission of Ports some years ago, when studying the ports of Chile for development of port facilities, decided upon **Arica**, **Antofagasta**, **Valparaiso**, **Talcahuano**, **Lebu**, and **Valdivia**. The work at all these ports involves construction of extensive breakwaters as well as wharves and warehouses. The work on the jetty at the Port of **Antofagasta** is progressing rapidly and it is expected that the jetty will be completed in 1926. Cost of the present contract is about \$8,500,000. Remaining works, consisting of piers and other facilities, will cost \$6,500,000 more.

San Diego, Calif., is to have a marine plant and loading station of the Pan-American Petroleum Company.

The Navy Department will build a reinforced concrete pier, 1000 feet long, south of and parallel to Mu-

nicipal Pier No. 1 for naval supplies, to cost \$1,000,000. Dredging work will have to be done in this connection.

Long Beach has some very important port projects under way, including:

Dredging of harbor and turning basin to depth of 32 feet;

Plans nearing completion and bids to be shortly asked for supply of 1,500,000 tons of rock for bulkheads for outer harbor;

Union Pacific Railroad to build terminal;

Patton & Davies Lumber Company to establish docks and lumber yard on 38-acre site to cost \$750,000;

Southern Pacific Company to build rail and water terminal on 49 acre site to be used jointly with Dollar Steamship Line;

Graham Bros. to build docks and plant in connection with their road building plant and the Catalina Island quarries;

Pacific Steel Company has started dredging and bulkhead work for the first unit of a large steel plant.

Los Angeles Harbor Commission is planning a belt line railroad to connect the waterfronts of **Wilmington**, **Long Beach**, and **San Pedro**.

Oakland is the scene of activity on the part of four large oil companies in entering the retail business in the San Francisco Bay district. Facilities include wharf building on the waterfront and dredging to accommodate unloading of tank vessels.

Pan-American Company to build plant on 7.22 acres, foot of Fifth Street, to cost \$300,000;

General Petroleum Corporation, to build plant near **Parr Terminal** and use that terminal;

Richfield Oil Company to build station near **Parr Terminal** and use that terminal, plant to cost \$175,000;

Ventura Refining Company to build plant and dock on three acres on **Inner Harbor** at **Nineteenth Avenue** and **Dennison Street** to cost \$250,000.

San Francisco has awarded contracts and work is now under way for the **China Basin Terminal**. **Clinton Construction Company** on a bid of \$587,000 has contract for bulkhead and foundations. **E. K. Parker Company** has contract for first two stories of warehouse, bid \$315,950.

Associated Oil Company is dredging a turning basin and approach at **Bullshead Point** on upper **San Francisco Bay**, where a loading pier for tank ships will be built to facilitate shipments from the refinery at **Avon**.

The **Rodeo-Vallejo Ferry Company**, **Vallejo**, will have to practically rebuild its entire terminal facilities within a year at a cost of \$112,000 due to destruction by toredo worms.

Portland. Commission of Public Docks has submitted three plans of **City Engineer Laugaard** to a committee of three consulting engineers for selection of best plan for terminal construction to cost total of \$11,000,000. First unit to cost \$2,000,000.

West Oregon Lumber Company and **Joseph Supple** are each building additions to their respective docks.

Seattle's principal port improvement project is the extensive terminal facilities now building by **Pacific Steamship Company**, first unit of which is nearing completion.

East Waterway Dock & Warehouse Company has completed a 250-foot addition to its wharf on **Harbor Island**.

Arden Salt Works of **San Francisco** awarded contract to **Hans Pederson** of **Seattle** to construct a pier and wharf on **Elliott Bay**, 300 feet long, to cost \$150,000.

Bremerton. U. S. Navy Department received bids on **February 4** for first unit of outfitting pier at **U. S. Puget Sound Navy Yard**.

Honolulu will within the next month or two have three of the finest piers in the world—**Piers 8, 9 and 10** being now almost completed. The piers will have berthing spaces of 1800 feet and approximately five acres of sheds.

Nome has been allotted \$40,000 by U. S. Army Engineers for harbor improvements.

Vancouver has announced some very important harbor improvements including:

Construction of an annex to **No. 1 grain elevator** this spring;

New cold storage plant to be erected by **Harbor Board** to cost \$2,000,000;

New dock to be built by a large **United States freight handling concern**;

Establishment of switching yards in the east end of port.

(Continued from page 39)

government should take some measures to help vessels operated by private companies, as the present recommendations of the committee are for aid for Shipping Board vessels. Copies of the resolution and recommendations were ordered forwarded to members of the committee.

To Bring Europe Closer

Plans for the classification of Rum Row as a foreign port in order to check the transportation of supplies to liquor carrying ships lying off the coast are reported to be under consideration by the legal advisers of the prohibition enforcement agencies of the government.

Under the proposed rule a fine of \$500 would be imposed on the master of a vessel making a trip to the forbidden area without formal clearance papers issued at an United States port. It is already held by the courts that trips to the liquor fleet by supply vessels are foreign voyages, but at present the penalty for such violations of the navigation laws by unlicensed small boats is comparatively light.

Tortoise and Hare

In connection with the world tour of the Red Star liner Belgenland, it has been pointed out that if the ship adheres to her schedule she will cover the 28,000 miles in 133 days, beating the record of the United States Army round-the-world flyers, who covered 27,000 miles in 150 days.

Sea Savings

The Ocean Credit Union, the banking institution operated by the Ocean Association of Marine Engineers at 15 Whitehall street, New York, announced recently that the board of directors has authorized the payment of 6 per cent dividend to the shareholders for the year 1924.

"We are not only proud of our earnings of 6 per cent dividends for the shareholders," says Bert L. Todd, president of the Ocean Credit Union, "but what pleases us most is the fact that we have been able to induce so large a number of men following the sea to start small bank accounts and begin saving for a rainy day. The course of the shipping game, from the employes' standpoint, has been detrimental to financial independence due to the long periods of unemployment caused by depressions and the continual change of ownership of vessels."

The association has also opened a cooperative supply store, where the men can purchase the supplies needed aboard ship, and at the end of a year receive a 5 per cent discount on the amount of their purchases, which will be added to their bank accounts, thereby still further assisting them to get a little more to windward financially.

American Bureau

A plan for a comprehensive system of pensions for all employes of the American Bureau of Shipping throughout the world was adopted in response to the suggestion of Stevenson Taylor, president of the organization, who in connection with Walter Wood Parsons and O. D. Duncan, as members of a special committee, worked out the plan. President Taylor also announced that he had put in operation a group insurance plan under which the dependents of every employe of the bureau will receive a death benefit of from \$1000 to \$5000, issued solely upon length of service and without regard to position occupied or salary received.



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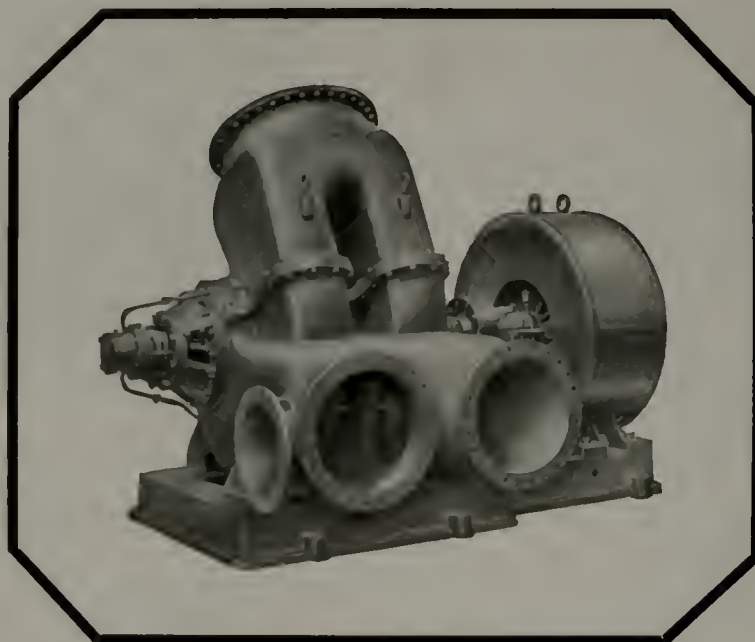
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Worthington Volute Condenser Circulating Pump

The Circulating Water

OPERATING efficiency, aboard ship, might almost be said to be primarily a matter of efficient water circulation; condenser circulation in a steamer, jacket and piston cooling water circulation in a motorship; sanitary circulation; fresh-water circulation.

A sure, efficient and reliable means of promoting this circulation for any of these purposes, is a WORTHINGTON centrifugal pump. Many years of engineering experience have demonstrated the high efficiency of the centrifugal pump for moving large volumes of water, and WORTHINGTON centrifugals are designed in accordance with the best approved principles of the art.

And in emergencies—for fire duty, or for freeing the ship of large masses of water after collision or grounding—the demonstrated entire reliability of WORTHINGTON equipment makes it a strong staff upon which to lean.

MANUFACTURERS OF:

<i>Circulating Pumps</i>	<i>General Service Pumps</i>	<i>Air Compressors</i>
<i>Boiler Feed Pumps</i>	<i>Fire Pumps</i>	<i>Condensers</i>
<i>Fuel Oil Pumps</i>	<i>Cooling Water Pumps</i>	<i>Drydock Pumps</i>
<i>Cargo Oil Pumps</i>	<i>Vacuum Pumps</i>	<i>Hydraulic Pressure Pumps</i>

WORTHINGTON PUMP AND MACHINERY CORPORATION

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BRANCH OFFICES IN 24 CITIES

WORTHINGTON



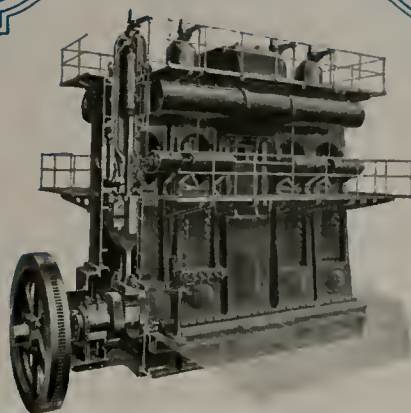
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Pacific Marine Review

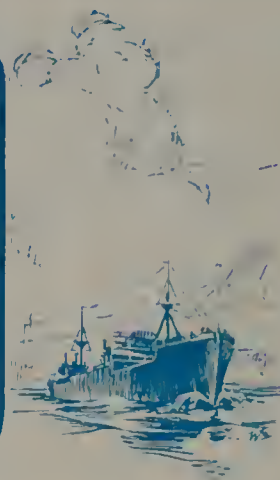
The National Magazine

of Shipping

APRIL, 1925



WORTHINGTON DOUBLE-ACTING
TWO-CYCLE DIESEL OIL ENGINE



**“We’re creepin’ on—we’re creepin’ on”—
“Less weight and larger power”**

THE words that Kipling put in the mouth of McAndrews, the “dour Scots engineer,” accurately describe the progress of the science of ship propulsion, not merely in steam, but in the use of a far more efficient engine which neither Kipling nor McAndrews foresaw,—the Diesel oil engine.

But every so often, in human progress, the “creeping” gives place to a leap. Such a leap was taken when the Worthington engineers conceived the original idea which, for the first time, made the two-cycle, double-acting Diesel oil engine a thoroughly reliable and commercially successful marine engine.

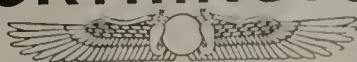
At one stroke the new Worthington design eliminates the weaknesses which have led to so many cracked cylinder-heads, so many cylinder failures; and advances the successful application of Diesel propulsion into a wholly new field.

Yet back of this apparently spectacular advance was more than twenty years’ experience in the design and construction of internal-combustion engines, culminating in three years of careful research and experimental work that left nothing to chance.

That is why the Worthington two-cycle double-acting Diesel oil engine is a conspicuous example of economy and reliability for marine practice.

WORTHINGTON PUMP AND MACHINERY CORPORATION
115 BROADWAY, NEW YORK CITY BRANCH OFFICES IN 24 CITIES

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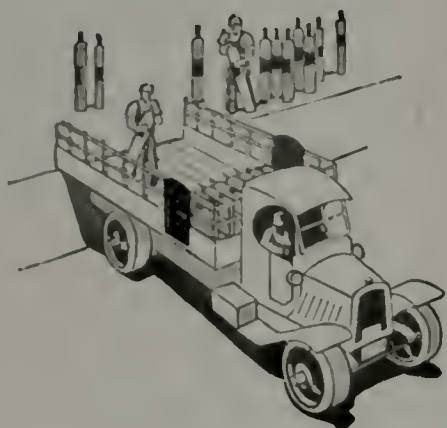


Official Organ
PACIFIC AMERICAN



Official Organ
SHIPOWNERS' ASSOCIATION
OF THE PACIFIC COAST

What Linde Process Service will *not* do!



YOUR REQUEST for Linde Service will not always bring you a man. Problems similar to yours may have been solved so frequently by Linde that the solutions have been compiled into a book or covered in a magazine article.

These books and magazines, which are a part of Linde Process Service, will not answer all of your questions. But they will answer many of them.

Linde Process Service will not do your work for you. Yet it may be necessary for a Linde Service operator to use a blowpipe to demonstrate the correct practice.

Linde Process Service will not train your operators. But it will help you to teach them and keep them informed on the latest practices.

Linde Process Service will not run your shop. But it will help you do your welding and cutting in accordance with the best shop methods.

Linde Process Service will not do your engineering. But Linde engineers can be of assistance to your own engineering department on all phases of welding and cutting.

Finally, Linde Process Service will not be perfect. But it is the best answer today to problems which arise when the oxy-acetylene process is used or contemplated. Furthermore, successful service in each specific case makes Linde Process Service better and more helpful to all Linde customers.

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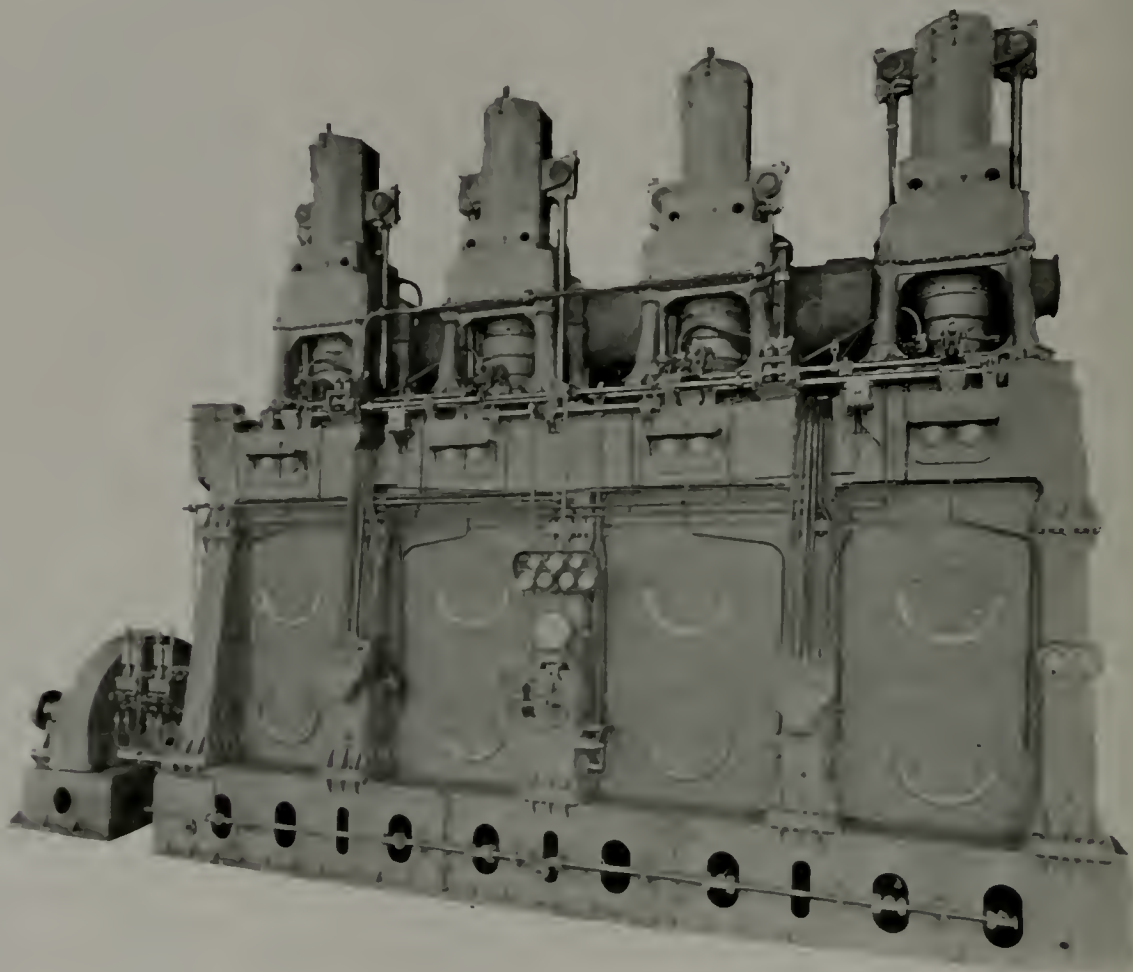
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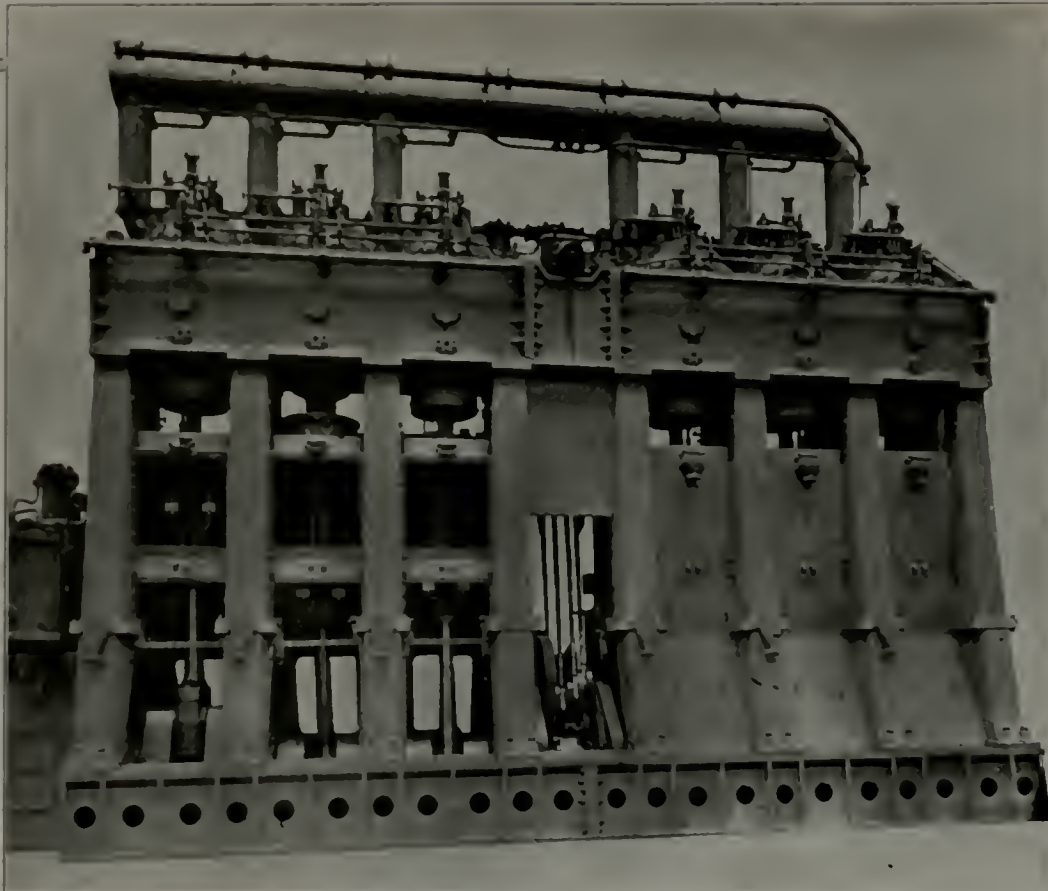
Photos by Leonard Frank, Vancouver

THE AORANGI ENTERS HOME PORT

Completing a very successful 9000-mile run, the Union Steamship Company's new motor passenger liner, Aorangi, swept up Burrard Inlet to Vancouver on the morning of January 30 last, ready in every respect to immediately take her place in the regular schedule of the Canadian-Australasian Royal Mail Line.

The Aorangi, with 23,000 tons displacement, made the 9000 miles on 1270 tons of fuel for all purposes. From Southampton to Cristobal she easily made up a late start of 15 hours. The entire voyage, recording 9047 nautical miles, was made at an average speed of 17 knots, with the propellers turning 115 revolutions a minute. The last lap from Victoria to Vancouver, 85 nautical miles, was made at 122 revolutions per minute, giving a speed with the tide of 19.4 knots an hour.

The Aorangi must be given the palm as the finest trans-Pacific liner. There are faster merchant vessels on the Pacific coastwise service, but none of any faster sustained sea speed on trans-Pacific. We congratulate the Union Steamship Company on this splendid acquisition to their already fine fleet, and we would pay our compliments to Captain Robert Crawford and Chief Engineer Henry Lockhart on this wonderful initial performance under their personal supervision.



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Pacific Marine Review

The National Magazine of Shipping

Official Organ
Pacific American Steamship
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576 Sacramento Street, San Francisco

339 AT 30 CHURCH STREET, NEW YORK

Member of Pacific Traffic Association

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President and Publisher.

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Official Organ
Shipowners' Association
of the Pacific

Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager.

A Great Opportunity

ON March 4th Calvin Coolidge took the oath of office and became President of the United States. The whole ceremony, music and speeches, connected with that event were made audible to every citizen of the United States who would listen. Thus the utterances of "Silent Cal" were broadcast to the largest audience ever addressed by the human voice.

The voice on this occasion spoke quiet, forceful words charged with weighty common sense and much wise, practical counsel. Economy, retrenchment, and thrift, combined with energy, character, and vision, should enable Calvin Coolidge to lead us far in the right direction.

He has our confidence, as shown by the huge popular majority we gave him at the polls. He has wise counsellors in the cabinet. He has a keen faculty for seeing clearly through tangled problems, and apparently his eyes are turned intently on that very tangled problem of Federal merchant marine operation.

The Shipping Board is due for a shake-down; the Emergency Fleet Corporation for a divorce; and probably much obsolete dunnage and tonnage for the scrap pile.

The result of such policies has been evident to every individual making out income tax statements this year. Capital is more free to enter business. "Pork barrels" for politicians are rapidly disappearing. Business is embarked on four prosperous years, with a stable, sensible hand at the Nation's helm.

These four years offer to the shipping interests of America a great opportunity to push forward constructive plans for the development of American foreign trade and her overseas merchant marine.

"Greater Prosperity Through
Greater Foreign Trade"



Twelfth National Foreign Trade Convention

SEATTLE, WASH.

June 24, 25, 26,
1925

Call and Preliminary Program

Call To Twelfth National Foreign Trade Convention, Seattle, June 24, 1925

THE foreign trade of the United States for the calendar year 1924 was valued at \$8,201,534,524.

In volume it exceeded 92,000,000 tons. This was at the rate of 252,000 tons for every day of the year, requiring the service of many vessels in the carriage of the cargo. Of this, 53.48 per cent, or 49,200,000 tons, consisted of American products exported to all the countries of the world to serve the needs of their peoples; and 46.52 per cent, or 42,800,000 tons, was composed of the products of other countries imported into the United States to serve the needs of our industries and our people. In volume it was the greatest foreign trade the United States has ever enjoyed. In value it was exceeded only by the years of exceptionally high prices that followed the war.

This year gives promise of exceeding 1924. There is a new assurance of stability and progress in Europe, where steady improvement has been made for the last six years. There is increasing activity in the countries across the Pacific, as well as in South America and other overseas markets. American foreign traders have seldom, if ever, faced a more hopeful outlook.

This prospect lays upon us the certainty of new problems, and the duty of confronting them with energy, courage, and with careful consideration.

To study the present status and future opportunities of American foreign trade, to stimulate effective co-operation toward making the most of our resources, and to obtain the sound judgment of experienced and practical traders who have made and are making this progress possible, the National Foreign Trade Council will hold the Twelfth National Foreign Trade Convention in Seattle, on Wednesday, Thursday, and Friday, June 24, 25 and 26, 1925.

The central theme of the convention will be "Foreign Trade Essential to Prosperity."

All Americans concerned in the expansion of foreign trade as a factor of national prosperity, whether in agriculture, commerce, education, industry, finance, or transportation, all chambers of commerce, boards of trade, national and state associations, and other industrial and commercial organizations, as well as firms and individuals, are cordially invited to participate.

Your cooperation toward making this convention a success and toward giving it the representation of every section of the country and every factor of international commerce, and thus making its service nation-wide, is earnestly invited.

JAMES A. FARRELL, Chairman.

"Jerry Daily"

PERPETUATING the memory of Jerry Daily, former manager of the marine department of the San Francisco Chamber of Commerce, who passed away at his post of duty last summer after 39 years of service, members of the marine committee and a host of Jerry's friends gathered at Meiggs Wharf on March 24 to participate in the christening of the chamber's launch and the naming of the same "Jerry Daily."

Robert Newton Lynch, vice-president and manager of the Chamber of Commerce, after hoisting the flag, eulogized Jerry Daily, telling of his long and faithful service with the marine department. He told of Daily's lifelong aim of a united marine and lookout service. Within a few months after his death the two services were united, and the Chamber of Commerce therefore took this occasion and means to perpetuate the memory of Daily's service in and connection with the organization.

Abe Murks, the present manager, and Artie Beyers, assistant manager of the marine department of the Chamber of Commerce, were associated with Jerry Daily through long years of service, chronicling the arrival and departure of every ship and obtaining valuable information relative to cargoes. The Chamber of Commerce launch is first to meet incoming ships, day or night, papers being dropped from the huge liners to the pit of the tiny craft. They are relayed rapidly from the wharf lookout station to the Chamber of Commerce.

Members of the committee having in charge the operation and management of the marine department are: J. C. Rohlfs, manager of marine department Standard Oil Company (Calif.), chairman; F. J. O'Connor, manager of the Donovan Lumber Company, vice-chairman; A. A. Moran, head of operating department of the Dollar Steamship Company; Hugh

Gallagher, assistant freight manager of Pacific Steamship Company; Captain Ryland Drennan, manager of the operating department of the Pacific Mail Steamship Company; Robert Newton Lynch, vice-president and manager of the San Francisco Chamber of Commerce; H. W. Myers, manager Hobbs, Wall & Company; L. C. Stewart, representing Sudden & Christenson; Thomas Plant, head of the operating department of the American-Hawaiian Steamship Company; Captain J. G. Ludlow, manager of the California Stevedore and Ballast Company; Captain W. J. Peterson, representing Shipowners' Association of Pacific Coast; L. P. Williams, secretary of the committee.

Errata

IT appears that the article, "Radio Telephone on Shipboard," which was published in the February issue of Pacific Marine Review was considerably in error in several particulars. The Editor recently received from a prominent radio operator on board a Pacific Ocean liner the following statement of these errors:

"The first statement of the type of apparatus installed on the Maui as a 250 watt installation should read 200 watt installation.

"Secondly, the Matsonia has not the largest installation; but one of the largest. There are three sets on the Pacific Ocean of the type on the Matsonia. The H. F. Alexander, the Dorothy Alexander, and the Matsonia all have the same installation—namely, a 1000 watt tube transmitter. By this it will also be seen that the statement, 'The Maui's set is identical with that installed on the Admiral Line's fast coastwise steamer H. F. Alexander a year or two ago' is incorrect. The set on the H. F. Alexander has five times the power output of the set on the Maui, but is identical with that on the Matsonia."

We are always glad to welcome comments of a careful reader.



Left.—Marine Committee San Francisco Chamber of Commerce.
Above.—"I christen thee Jerry Daily," J. C. Rohlfs.



A Pioneer At Eighty-One

"THERE is a great deal of work ahead of me. I expect to do some of the biggest things of my career during the next twenty years. I am a pioneer today and I have been in the pioneer class all my life. I shall always work because I believe work is the foundation of all real happiness in this world, and no man is ever old enough to retire; but mainly I keep on working simply because I like it."

So declared Captain Robert Dollar of San Francisco, world citizen and dean of American shipping men, on his eighty-first birthday. Seven hours' hard grind, supervising the world-wide interests of the Robert Dollar Company and of the Dollar Steamship Line, marked this birthday celebration.

Captain Dollar still retains the vision of his youth, and looks forward to great days for the Pacific merchant marine. "In twenty-five years," says he, "vessels on the Pacific will equal in number those on the Atlantic. Later we shall outstrip the East. The wants of the Orient are increasing, and business is expanding steadily. We must keep right after that trade if we want to retain our leadership."

Here's hoping that this virile Scotch viking may long continue his leadership in the American merchant marine, and that of him it may be said to the end, as was said of a famous leader in the olden time, "his eye was not dimmed, neither was his natural force abated."

American Marine Exposition

THE development of a merchant marine, of port and harbor improvements, and of the forms and processes of marine transportation require intensive cooperation on the part of all shipping and marine interests.

In America today there are nearly 100 marine and

allied associations based upon specialization in various parts of the marine industry. Through this specialization there has arisen a phase in the American merchant marine development wherein it very frequently happens that each association considers itself to be, or is considered by its admirers to be, the custodian of the one and only solution to America's shipping problem. Gradually we are emerging from this phase and are beginning to learn that only through united thought and action, through intensive cooperation, can any progress be made toward the stabilization of the American marine transportation industry. The American Marine Association has sought to bring about such cooperation, and is increasingly meeting with cordial response on the part of specialized marine bodies.

A concerted drive is being made this year to have as many marine organizations as possible hold their annual or special meeting in New York City during the American Marine Exposition, November 9 to 14, 1925. A large number of societies have already promised to cooperate, and it is safe to assume that, with the Pacific Coast, the Gulf, the Great Lakes, and the Atlantic Coast associations coming in, various steamship companies will offer special rates and many American business men, whose financial and active support is necessary to the American merchant marine, will take advantage of the opportunity to visit the marine exposition and attend many of the meetings and be benefited by the program of these various associations.

Publicity in connection with the American Marine Exposition is being well taken care of by a strong committee of marine writers, reporters, and editors. The advertising committee has already laid a "bar-rage of advertising through the marine publications." The sales committee has, up to the present time, sold a very much larger amount of space than was disposed of at the same date last year, and the exhibits committee is creating a tremendous interest among shipowners, shipbuilders, machinery manufacturers, and dealers in marine equipment and supplies, to the end that each exhibitor takes pride in making an exhibit worthy of American merchant marine standards.

These efforts have resulted in an unprecedented sale of exhibit space, and the indications now are that the house will be sold out some months before the opening date.

The Shipping Board Sales

AS we go to press word comes from Washington that the Shipping Board has sold to the Dollar interests the five passenger liners now operating trans-Pacific out of San Francisco under the management of the Pacific Mail Steamship Company. San Francisco shipping circles are now awaiting with intense interest the next move on the part of the oldest and best-known steamship company in America.

PORTS OF THE PACIFIC

IMPROVEMENTS DEVELOPMENTS ACTIVITIES



The first wharf at San Pedro, the beginning of what is now Los Angeles Harbor

(Reproduced from "World Ports")

ALAMEDA AS A PORT OF CALL

WITH the arrival of the freighter K. I. Luckenbach at the Encinal Terminal, officially opening this new terminal for business, Alameda announced to the world that she was now in the field of Pacific Coast ports bidding for offshore trade. Several intercoastal lines are now using the Encinal Terminal.

The project so far completed at a cost of \$1,050,000 is the first unit of terminal to cost about \$8,000,000, which is planned for the Alameda side of the Oakland estuary. The second unit, to cost about \$800,000, is now under construction and the substructure will be finished about June and the sheds about October of this year. The new terminals, which are on the Alameda Belt Line Railroad, are reached by three trans-continental railroads and are expected to attract many new industries to Alameda. C. M. Covell is

president and general manager of the company. This terminal expects to handle a large share of California's 1925 wheat crop.

Oakland. The recently passed Rivers and Harbors bill carried an appropriation of \$875,000 for the dredging of the Oakland inner harbor contingent upon the removal of the Webster street bridge between Oakland and Alameda, and the construction of the projected tube, bids for which were opened on March 23, and the construction by the cities of Oakland and Alameda of a dike between Oakland and Government Island in the estuary. This dike would leave but one channel around the island, that between Alameda and the Island. The dike would cost about \$20,000 and negotiations are now under way between the two cities to facilitate this work.

The dredging of the Oakland inner harbor is of vital importance to

the development of both Oakland and Alameda waterfronts, and the Western Milling Company, which hopes to move a great portion of wheat through the Encinal Terminals this year, claims that a depth of 25 feet in the upper section of the harbor is necessary in order to accommodate the grain ships.

Los Angeles Harbor. Included in the Rivers and Harbors bill recently passed by Congress is an allotment of \$6,500,000 for Los Angeles and Long Beach harbors. Three million dollars is to be spent by the government on dredging operations in the harbors and the balance, \$3,500,000, is for the construction of two arms of a proposed breakwater to connect with the present outside breakwater and to make an enclosed harbor. The appropriation will be made conditional on the establishment of an unified port district to include the two municipalities. The governing



The port of Los Angeles, showing present and projected development. Compare this with picture at top of page to show progress of seventy years (Reproduced from "World Ports")

bodies of the two cities are now working on the establishment of such a port district.

Merritt, Chapman & Scott Corporation was recently awarded contract for dredging shoals at Los Angeles harbor in the amount of \$80,000. Contract was also recently awarded to the Pan Pacific Construction Company for making and driving 116 concrete piles to complete the wharf at Berth 230 A and B.

A large and particularly modern two-story double shed pier is nearing completion on Terminal Island at Berth 230 D and E and 232 A and B. Each shed is approximately 100 feet wide by 100 feet long, with every modern equipment for quick and efficient handling of freight. The construction of this pier adds over 3000 linear feet to docking facilities of the harbor.

Another double shed pier on Terminal Island at Berth 228 D and E and 230 A and B is in the preliminary stages of construction. This pier will consist of two sheds approximately 120 feet wide by 1000 feet long with apron wharf and double ship side tracks in front of each shed.

Long Beach. City Manager Windham announced the latter part of January that the city had received the approval of the Federal government for the construction of two moles extending into the ocean near the harbor entrance. The moles will be 2000 feet long and 340 and 450 feet wide and are intended for the use of the Wilmington Transportation Company for its line of Catalina Island steamers. It is planned to eventually fill in the space between the two moles as reclaimed land.

San Pedro. Plans are now on foot for the improvement of what is known as the Burkhart Ranch (owned by Burkhart Brothers) property on the San Pedro waterfront adjoining the West Basin and the opening up of this 1800 acre tract for industrial and waterfront property.

San Francisco. The Board of State Harbor Commissioners during March awarded three important contracts for waterfront improvement at the Islais Creek reclamation project.

One was for driving of the necessary piling for sea wall to Healy Tibbitts Construction Company on a bid of \$24,600; the second was for dredging work to make the fill, which was given to the American Dredging Company on a bid of 30 cents a cubic foot, or approximately \$48,000; the third was for furnishing rock for the sea wall, which was

awarded to F. W. Camp on a bid of \$125,200.

Contract was awarded to the Clinton Construction Company as lowest bidder for the alterations of Pier 40, \$96,400. The alterations on this pier will consist of extension of the pier 250 feet and the installation of a railroad track along the south side.

Plans are on foot for the establishment of a huge central lumber terminal at South San Francisco by lumber interests of San Francisco.

Pittsburg, California, harbor board has given the Pittsburgh Construction Company a contract, on a bid of 40 cents a cubic yard, for dredging at fishermen's wharf.

Richmond harbor commissioners expect shortly to submit to the city council plans for a harbor expansion program, as outlined in the recent survey made by G. E. Nicholson, while he was engineer for Seattle harbor, and C. T. Leeds, Federal government engineer.

Bremerton, Wn. The Navy Department on February 25 awarded contract to Henry & McFeehn of Seattle for the construction of the new repair and outfitting pier at the Puget Sound Navy Yard for \$1,187,648.

Astoria. Officials of the Union Oil Company of California have announced that they will shortly start construction of a new dock at this port to cost about \$60,000. It will replace the present Mack Dock. In the fall the company will build a storage and distributing plant on property adjoining the dock.

Hawaii. Senate Naval Committee on February 11 approved plans for

improvements in the channel and harbor of Pearl River to cost \$5,982,000.

Hawaiian Legislature will be petitioned for a sum of approximately half a million to rebuild a commodious new wharf at Kahului, Maui, to take the place of the one which collapsed during February. A similar amount is to be requested for the construction of a new pier at Hilo, Hawaii, as it is claimed the present facilities are insufficient.

Pier 6, Honolulu, is now undergoing general reconditioning and painting.

Prince Rupert, B. C. Contract was awarded on January 21 for the foundation for the first unit of the Prince Rupert terminal grain elevator.

Vancouver. The cold storage plant to be built at Vancouver will be seven stories in height of reinforced concrete, with brick filler walls, and will cost about \$400,000. The first unit to be built will cost about \$130,000.

Other improvements will include a fishermen's wharf costing about \$150,000; a freezing plant at fishermen's wharf to cost \$20,000; and the elevation of the bridge over Second Narrows as well as extensive terminal railway improvement.

PACIFIC ASIATIC PORT IMPROVEMENTS.

Java. The Surabaya harbor board has completed plans for the erection of a pier at Kamal, Madura, which will cost about \$24,400.

Saigon, French Indo-China. The government of Indo-China is planning the creation of a modern port



Junks on the Whang-Po River, near Shanghai

at Saigon to meet the conditions of the rapidly growing shipping of this port. The project will include the construction of a canal, which will shorten the course up the river, and at a point where the river is widest docks and warehouses will be built equipped with every modern appliance. On October 7, 1924, the Governor General of Indo-China authorized the Board of Directors of Saigon commercial port to contract for a first-class loan of two million piastres to buy the necessary lands for the future development of the harbor and hasten the realization of the new works.

Dairen, Manchuria, now has a large and commodious ship passenger station connected with the main thoroughfare of the city. The station is of triple construction—passenger station, pavilion extension, and viaduct for providing easy communication from passenger ships to the city and trains.

At present the freight which originates in the dependable tributary area to a possible Sacramento deep water canal is about 450,000 tons; incoming freight would approximate 125,000 tons annually.

City Manager H. C. Bottorff, secretary of the Sacramento Deep Water Deep Canal Commission, is having 1500 copies of the complete report printed to be distributed to all who are interested in this project.

One angle of the proposition to build a deep water canal to Sacramento is the possibility of the favorable action of the government in dredging the San Joaquin River and the establishment of a deep water port at Stockton.

Engineer's Report On Sacramento Ship Canal

ON March 3, C. E. Grunsky, consulting engineer of San Francisco, presented the report of his six months' economic survey of the proposed Sacramento Deep Water Canal to the members of the Sacramento Deep Water Commission.

According to Mr. Grunsky's report, such a canal would be feasible and desirable. Such a canal should be constructed with a view to carrying for the largest ocean vessels with a depth of 26 to 30 feet, and should follow the route outlined by the late Major Paul M. Norboe, who made an extensive study of this proposition while he was assistant state engineer. The area to be benefited by a deep water canal into the heart of the great California valley with a port at Sacramento would be the greater portion of Sacramento County, Colusa County, Yolo County, and Solano County, with material benefit to the nineteen Sacramento Valley counties, and general benefit to the Great Central Valley of California.

The cost would range from \$14,323,005 to \$20,534,585, depending upon depth and width, and the government might reasonably be expected to aid in the maintenance. The operating expenses would be approximately \$1,690,300 per year, with initial income of \$455,000 in 1930 to \$1,660,000 in 1950.

Mr. Grunsky is to be greatly commended in his report in that he makes quite clear the fact that the canal could not be expected to be operated as a commercial enterprise for the paying of dividends to shareholders, but "there can be no question that a port at Sacramento accessible to ocean going ships would result in large advantage to an extended zone of influence."

"A deep water ship canal and port would have the immediate effect of

reducing the tariffs now in force on freight to and from the ocean ports, and the resulting savings on transportation costs on freight originating in the great valley of California and destined for shipment may easily be \$400,000 to \$500,000 per annum as soon as an interior port is ready for business." This canal would also greatly increase the assessed values of the district benefiting from this canal service.

The Norboe plan for the route of the deep water canal would start in the channel of the San Joaquin River

Kolster Radio Compass Becoming Universal

MUCH curious query and comment is aroused, among commuters on San Francisco Bay ferries, by the increasingly frequent sight of a black square with diagonal cross braces which stands out prominently against the bright blue California sky above the pilot house of deep sea and coastwise vessels. This is the position finding antenna of the Kolster radio compass, a device which insures safe navigation irrespective of fog or failure of coastal lights and which is, as a consequence, rapidly coming into universal use on board vessels of the merchant marine. A few of the recent installations afloat and ashore are here enumerated to show the widespread use of this wonderful aid to navigation.

The lighthouse tender Amaranth, 11th District, Detroit, Michigan, is to be equipped with the Kolster radio compass before navigation opens in April. This is the first lighthouse vessel on the Great Lakes to be fitted with this newest aid to navigation. Used in conjunction

with the radio beacon stations now being installed at Detroit River Light, Buffalo Light, Lake Huron Lightship, Detour Light, White Fish Point Light, Manitou Light, and Devil's Island, the Kolster radio compass provides an infallible means of position finding.

Radio beacon stations are also projected for four more points on the Great Lakes as follows: Chicago Harbor Light, Milwaukee Light, Lansing Shoal Lightship, and Superior Entry Light.

Kolster radio compasses are already in use on the Henry Ford II and Benson Ford, these two Ford vessels being the first which were equipped with Kolster compasses on the Great Lakes.

With these aids to navigation on the Great Lakes, it is thought that hundreds of thousands of dollars per year will be saved the transportation companies and the traveling public in avoiding lost time due to fog.

On the Atlantic and Pacific coasts
(Continued on page 170)

THE CLIPPER SHIP YOUNG AMERICA

WE have received the following communication from Captain Thomas F. Hall of Omaha, and although it may seem strange to have a letter on nautical matters from the center of the continent, we anticipate that its contents will prove of much interest to our readers. We are pleased to find that the Pacific Marine Review is proving to be a connecting link between Captain Hall and the life he once knew so well, and will be glad to hear further from him, or from any other members of the old guard or those interested in these matters.

Captain Hall writes:

I was interested in your history of the clipper ship *Young America*. George and Jabez Howes, friends of mine, formerly of South Yarmouth, Massachusetts, bought her about 1864. Ezekial Baker and his brother Horace, also of South Yarmouth, commanded her for some years before she passed into the ownership of Mr. Rosenfeld.

In 1859 the *Young America* and the *Belle of the West* were close together for one whole day off Cape Horn. I was third mate of the *Belle of the West*. Both ships entered the Golden Gate the same day, July 24, close together, thereby making practically the same time from the Cape to the Golden Gate. Just as we were about to enter the Gate, the wind died down to almost a calm. Then the *Young America* walked away from us into San Francisco Bay. It was the only instance of any sailing craft "walking away" from or "crawling up" behind the *Belle of the West*. She was never outsailed in her whole career while owned in America, except during these few minutes.

Both vessels were hove to on the day they were together off the Horn, the *Young America* being to the windward. Later, when the *Belle of the West* was being hauled to her mooring alongside Market Street wharf, San Francisco, about a dozen of the crew of the *Young America* were assembled on the wharf to view her, saying that she was the handsomest craft they had ever seen as she exhibited her shape and copper to them off the Horn. They wanted to see her nearby.

If any one that was then on the *Young America* is now living, I should be glad to hear from him. There are none left on Cape Cod.

The second mate of the *Belle of the West* in 1859 was a Mr. Carr, an Englishman. He afterwards married and located in San Francisco and engaged in the business of "rigging." I presume that he has gone to his reward before this. I would give much to see him if he is living.



The clipper ship *Young America* at North Point Dock, San Francisco, February, 1873
(From photo owned by W. Francis, Seattle)

But neither ships nor their shapes nor their rigs account altogether for quick passages. Navigation has much to do with short passages. Perhaps one of my ideas on this subject will interest you.

You have no doubt noticed the printed chart tracks of the Sewall doubling Cape Horn to the westward; sighting Cape Horn twice about 40 days apart. I had similar experience on my first passage around the Cape in the *Wild Hunter*, with Captain Joshua Sears, in 1857. Consequently, when I got command of a vessel, I concluded to test out my theory. Of course one test proves nothing and I never had the second opportunity. My idea is to pass through the Straits of Le Maire by all means; then hug the shore, thereby avoiding the strong easterly currents and possibly getting a favorable eddying current westerly. Anyway the following is a fact.

I left Buenos Aires on April 20, 1864, for Callao, Peru, in charge of the very slow bark *Egypt*, lightly ballasted and standing entirely too high out of the water for windward work. She never made a speed of over seven knots an hour. During the seven days before I left Buenos Aires and the seven after (fourteen altogether) thirteen ships and barks and one three-masted schooner left Buenos Aires for Callao.

The *Egypt* arrived out June 3, 44 days passage. Not one of those fourteen vessels was there when I arrived and not one arrived for over seven days thereafter. The quickest passage of any one of those fourteen other vessels was fourteen days longer than the passage of the *Egypt*. Some of them had runs of over twenty days longer. Of course the *Egypt* must have had good fortune in weather and wind off the Cape, but I did not think so then as she was hove to much of the time. Then, again, if any of the other vessels had been in the same locality, they should have had

(Continued on page 181)

SCRIMSHAW

An Interesting Hand Craft Developed On American Whalers

By RAPELJE HOWELL

WHALING and the manufacture of whaling products became practically the leading industry of the New England States during the period from 1815 to 1860, when the United States was recovering from the effects of the war of 1812, particularly the heavy losses sustained by the merchant fleet of the country. After 1860 there set in a decline due to the substitution of mineral oil for whale oil, and before the close of the nineteenth century the industry had almost entirely died out.

New Bedford was the greatest of all whaling ports, although at one time the island of Nantucket ran a fairly close second. In the year 1839 the ports of New Bedford and Fairhaven, which is just across the harbor, had a combined fleet of 221 whaling vessels, and in 1857 "New Bedford's fleet surpassed all others combined, attaining 330 vessels. . . ." Nantucket, after losing one-half her whaling fleet in the war of 1812 (had so far recovered by 1819 as to be able to muster a fleet of 60 ships, and in 1843, when at the height of her prosperity, had 88. After that year, owing in a great measure to bad harbor conditions, the Nantucket fleet began to shrink, and in 1870 the last whaling barque cleared from that port. Other New England whaling ports were Edgartown, on the island of Martha's Vineyard, Provincetown, at the extreme end of Cape Cod, with Dartmouth, Mattapoisett, Marion, Wareham, Westport, Wood's Hole, and Rochester, all on Buzzards Bay.

On Long Island the whaling industry was in existence as early as 1784, in which year two whalers



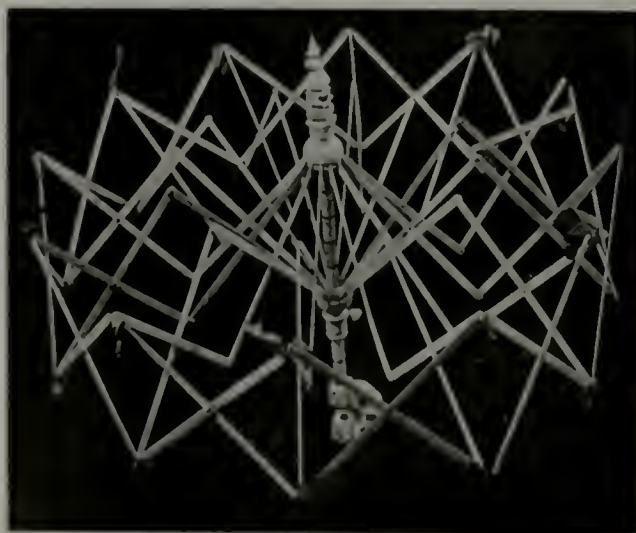
Frederick H. Howell of New York. The illustrations herewith show a part of the scrimshaw specimens owned by Mr. Howell and representing years of patient collecting from original sources. (Photo by Edwin Levick, New York)

SKRIMSHANDER

"THROUGHOUT the Pacific, and also in Nantucket, and New Bedford, and Sag Harbor, you will come across lively sketches of whales and whaling-scenes, graven by the fishermen themselves on Sperm Whale-teeth, or ladies' busks wrought out of the Right Whale-bone, and other like scrimshander articles, as the whalemén call the numerous little ingenious contrivances they elaborately carve out of the rough material, in their hours of ocean leisure. Some of them have little boxes of denticistal-looking implements, specially intended for the scrimshandering business. But, in general, they toil with their jack-knives alone; and, with that almost omnipotent tool of the sailor, they will turn you out anything you please, in the way of a mariner's fancy.

"One of the peculiar characteristics of the savage in his domestic hours is his wonderful patience of industry. An ancient Hawaiian war-club or spear-paddle, in its full multiplicity and elaboration of carving, is as great a trophy of human perseverance as a Latin lexicon. For, with but a bit of broken sea-shell or a shark's tooth, that miraculous intricacy of wooden network has been achieved; and it has cost years of steady application.

"As with the Hawaiian savage, so with the white sailor-savage. With the same marvellous patience, and with the same single shark's tooth, of his one poor jack-knife, he will carve you a bit of bone sculpture, not quite as workmanlike, but as close packed in its mazziness of design, as the Greek savage, Achilles' shield; and full of barbaric spirit and suggestiveness, as the prints of that fine old Dutch savage, Albert Durer."—From "Moby Dick," by Hermann Melville.



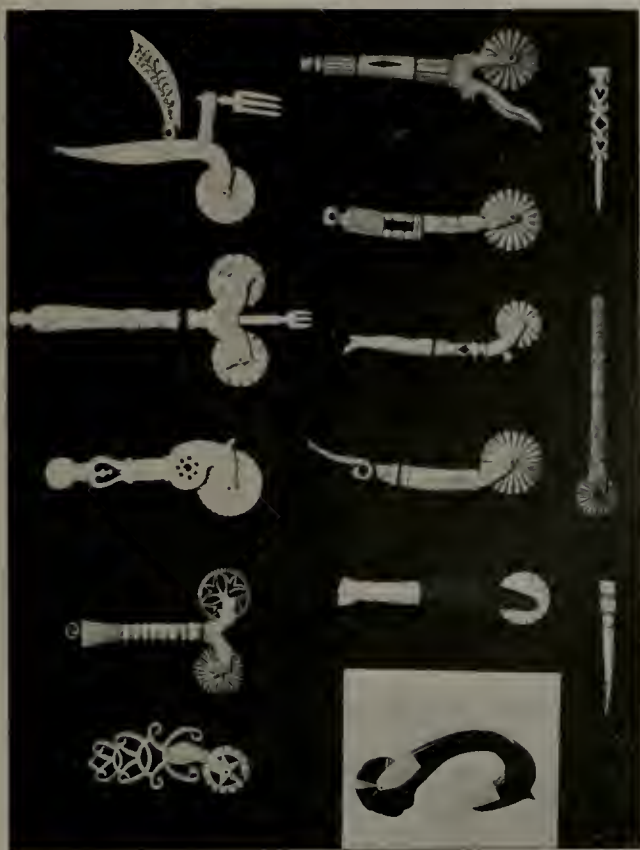
A collapsible yarn reel, made with jackknife from whale ivory (Photo by Edwin Levick, New York)

cleared from Sag Harbor, and it lasted until 1875. Six Long Island towns sent out their ships during this period, and of these Sag Harbor had the largest fleet, consisting of 63 vessels, and Greenport 12, at the time of the greatest prosperity in the industry.

The whaling vessels seem at first to have been of various rigs and sizes, but finally they came to be more or less standardized and of one type—a barque of from 300 to 500 tons. A model typical of these ships made to a scale of six inches to the foot, or in other words, exactly one-half her actual size, may be seen today in the Old Dartmouth Historical Museum in New Bedford. This model is complete in every detail of rigging and equipment, and no more comprehensive idea of a whaler could be gained than by a careful study of this ship. The model is of the Lagoda of New Bedford, of 371 tons, 107 feet 6 inches long, 26 feet 9 inches beam, and 18 feet 4 inches deep. She made six voyages during the years 1841-1860, and it might be of interest to add: "netted them (her owners) an average of 98 per cent profit for each of the six voyages. . . ."*

As these whaling voyages lasted anywhere from two to four years, for the sperm whale was hunted in the Pacific, and there were many long periods during which the fishing was practically at a standstill owing to a lack of whales, the crews found themselves with plenty of time on their hands, and it was an occupation to while away this time that the making of Scrimshaw came into existence. Scrimshaw, then, may be defined as a term sufficiently

* Maritime History of Massachusetts, by Samuel Eliot Morrison.



A few of Mr. Howell's jaggin wheels
(Photo by Edwin Levick, New York)

comprehensive to include all the articles made by the whalemén, not connected in any way with their duties on the ship; and this comprehensiveness will be appreciated when we come to scan the following list: pie-wheels, or pastry-makers or jaggin wheels (shown in the illustrations), walking sticks, ditty-boxes, yarn-reels (illustrated), paper-cutters, bodkins, cribbage-boards, checker-boards, etched whale-teeth, as well as other things in all probability.

As to the materials out of which these articles

were made there was of course first and foremost the sperm whale ivory, obtained from the jaw pan after the head had been severed from the body, and the teeth. This ivory was combined with bone, whalebone, wood, silver and mother-of-pearl, used in an infinite variety of ways but mostly in the form of inlay. The great variety of the jaggin wheels can be realized in no better way than by a close study of the illustrations. It will be noticed that in form, or general design or outline, we find human arms, hands, legs, and feet, animals such as serpents, birds, fish, dogs, and horses, besides architectural columns, scrolls and pierced work.

The wheel itself was made for the purpose of pressing-down and marking or fluting the edges of the upper crust of a pie, while the tines of the little forks, which will be seen on some of the pieces, were used to prick the blisters on the pie crust and allow the escape of the steam from the interior. The wheels were also sometimes used to cut out a circular piece of dough.

On the return from a voyage these articles of scrimshaw, of which the jaggin wheels seem to have been the most popular, were presented to the wives, sweethearts, mothers, or sisters of the whalemén.

In a bulletin of the Brooklyn Museum, referring to a loan collection of scrimshaw, we find the following:

"This art was developed by American whalemén, and disappeared with their passing; it is extraordinarily interesting, in that it constitutes perhaps the only native handicraft of the people of the United States."

This statement should not be taken too literally, for we must remember that, while the captains and mates on the whale ships were almost invariably Americans, the crews, on the other hand, were recruited among all nationalities and some of them were even natives of the South Sea Islands picked up during the course of a voyage.

We have no very definite or clear information on the subject of the tools employed by the whalemén in this scrimshaw work, but it is supposed that they used their jack-knives, files, and saws.



NEW BEDFORD WHALER

The model shown in this illustration was exhibited at the recent New York Model Show. It is an exact facsimile in miniature of the New Bedford whaler *Lagoda* referred to in the text of the accompanying article. The *Lagoda* was of 371 tons burden, 107 feet 6 inches long, 26 feet 9 inches beam, 18 feet 4 inches deep. On this comparatively small vessel New England whalemén lived at sea for periods averaging three years away from the home port. Many of the voyages showed profits around 100 per cent, or from 30 to 40 per cent per annum.

(Photo by Edwin Levick, New York)

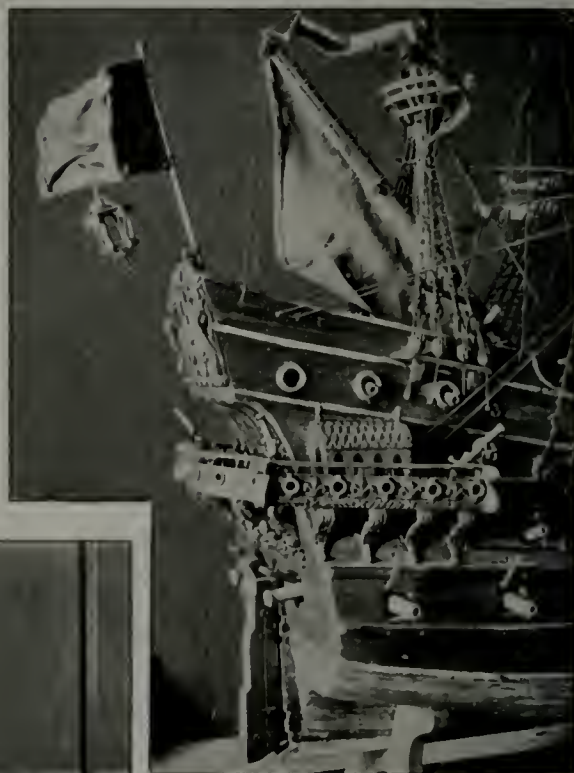


(Photo by Edwin Levick, New York)

Modeling Ship History

For two weeks, February 10 to 24, New York was privileged to view history, displayed in the model makers' art, at the annual exhibition of the New York Ship Model Society. Egyptian barges, Viking ships, Spanish galleons, British privateers, Line-of-Battle ships of France and England and Spain, models contemporaneous with the days that Samuel Pepys makes familiar in his diary, clipper ships of the golden age of America's shipping, whalers from Nantucket and New Bedford, modern battleships, submarines, and passenger liners, together with miniature facsimiles representing practically each decade of the age of steam, all exhibited together in one large room, gave opportunity for the envisioning of the complete story of the sea.

It is the aim of the Ship Model Society in making these periodic displays to achieve the establishment of a permanent marine museum in the city of New York, and that is certainly a worthy plan. In the United States several ports and cities have already established such permanent museums.



TWO MODELS

At the left is shown a model of a fully rigged whaling bark. This model, including all the spars, boats, blocks, and fittings, is carved entirely from whale ivory. Above is shown details of the stern of a Spanish galleon—note the rich decorations and carvings and the peculiar rudder and method of tiller application.

(Photos by Edwin Levick, New York)

AMERICAN INTERNATIONAL CORPORATION

Now On a Sound and Satisfactory Basis Under the Administration of Matthew C. Brush

ON November 22, 1915, there was organized in New York the American International Corporation for the purpose of financing national and international trade and construction contracts. The authorized capital stock was \$50,000,000, and by October 5, 1919, this amount had been fully paid up.

In common with all large undertakings dealing in international trade, this corporation on December 31, 1920, found itself suffering from a very large dose of over-expansion. On that date the corporation and its subsidiaries had approximately 100 offices, branches, and representatives throughout the world, and 1669 employed personnel on the executive staffs.

With affairs in this condition, Matthew C. Brush was called from his successful completion of the program of government shipbuilding, as president of the American International Shipbuilding Corporation, to assume the post of vice-president of the parent corporation. He immediately undertook a thorough survey of the entire situation, and as a result of this survey the foreign offices of the corporation at Paris, London, Rome, and Pekin were closed. Several of the subsidiary corporations were liquidated in an orderly fashion, so that in more than one instance the assets of the subsidiaries brought practically the entire book value. Other subsidiary corporations were reorganized and deflated so as to place their affairs on a firm profitable basis.

As a result of this work, the management and directors of the American International Corporation, early in 1923, decided that the corporation's capital should be adjusted so as to bring it into agreement with the asset value. This adjustment resulted in a net asset value of \$20,609,000.

At the same time the contingent liabilities of the corporation on account of loans to subsidiary companies had been reduced from \$20,000,000 to less than \$2,000,000, and the annual report for December 31, 1924, shows a net value of \$20,660,000, with accrued excess value of securities over and above book value amounting to \$2,600,000.

Fifty per cent of the corporation's present capital is revenue producing, and the 50 per cent of that capital which is at present not producing revenue is invested in industries which are essentially sound and have been deflated to a normal basis. This portion of the capital of the corporation has a present market value 20 per cent greater than that at which it stands on the books. That portion of the capital which is



Matthew C. Brush, president of the American International Corporation

earning produced during 1924 approximately 8 per cent.

On the opening of 1925, the corporation found itself in the most satisfactory condition that it has enjoyed since 1920 and is now in a position to properly function under the wide powers of its charter. Through its associate interests it holds, or has large interests in, valuable contracts for public works in Greece, in Poland, in South America and in China.

Under the energetic and inspiring leadership of Matthew C. Brush, now president of the corporation, the American International Corporation should go forward to a successful application of the widespread activities contemplated by its founders.

Matt Brush has a rare combination of energy, determination, and ability to work harmoniously with associates. His experience during the forty-six years of his life has covered a very wide range of railroad, construction, and administrative functions. Born in Minnesota, he worked his way through high school in Minneapolis and Chicago through the Armour Institute, and through the Massachusetts Institute of Technology, and then started as an apprentice boy in the Union Pacific shops, Council Bluffs.

From there on, his work follows the railroads up the various rounds of the ladder, from foreman in the round house to superintendent in charge at the shops of transcontinental railroads, and to vice-president and general manager of an electric municipal railway system in Massachusetts. As president of the Boston Elevated Railroad, he made a wonderful record in reorganization of that great railway system. Attracting there the favorable attention of the American International Corporation and of Stone & Webster, he was called to take the presidency of the American International Shipbuilding Corporation.

Here, by sheer force of personality, he brought order out of chaos and he soon had that immense plant functioning and turning out ships at a world's record rate.

From the shipbuilding corporation, he went to the post of vice-president and then president of the American International Corporation, with results as above noted.

Throughout all of this experience, Matthew C. Brush has retained the respect both of his business associates and of his business enemies, by whom he is regarded as a clean living, straight shooting, American citizen, on whose personal integrity absolute dependence can be placed.

LAYING A TRANSBAY CABLE

Some Notes on the Operation of Connecting San Francisco with East Bay Cities Through Telegraph Wires, with Particular Attention to the Design of the Western Union Cable Laying Lighter

THE laying of a submarine cable is a matter that has had a great deal of attention from electrical and marine engineers. Many special devices have been developed in the work of laying transoceanic cables, and that particular branch has become fairly well standardized. A very good description of the laying of the ocean type appeared in a recent issue of the Saturday Evening Post.

For transbay cables, as laid in the waters of San Francisco harbor, an entirely different procedure is followed and a different type of cable is used. The ocean cable has a covering of rubber or rubber compound; the transbay cable has a lead covering, protected by steel wire armor wound spirally on the outside. Obviously these two types of cable require different methods of handling, especially in the matter of reeling on board the cable vessel. With the ocean cable, a special type of ship is used, and the cable is coiled into tanks, being paid out from the tanks by dynamometer into the sea. On the San Francisco Bay operation, the cable is reeled onto a spool or reel supported on bearings on a barge, and is run off this reel through a cable roller while the lighter is being towed across the bay.

A lighter especially designed for transbay cable laying purposes was recently constructed by the Oakland Launch & Tugboat Company at the plant of the American Dredging Company, Oakland. The designs for this lighter were prepared under the supervision of J. L. Ord and Louis Messner of the Western Union Telegraph Company, Plant Division, and the vessel was built under the supervision of David W. Dickie, naval architect of San Francisco. The general characteristics of this lighter are as follows:

Length over transoms	80' 0"
Length over-all	82' 0"
Beam over sides	38' 0"
Depth from the top of deck to under side of bottom	8' 8"
Freeboard light at derrick end	6' 7 $\frac{3}{4}$ "
Freeboard at opposite end	6' 2 $\frac{1}{4}$ "
Draft light at derrick end	2' 0 $\frac{1}{4}$ "
Draft light at opposite end	2' 5 $\frac{7}{8}$ "



Three construction views of the Western Union Telegraph Company's cable laying lighter Messner

With the reel loaded the lighter draft increases 14 $\frac{1}{2}$ ".

The reel or spool for the cable was 5 feet 3 inches in diameter and 15 feet 9 inches long inside the flanges. The gears, mounted on the flanges of the reel, are 11 feet in diameter and the spool is supported on an 8 $\frac{1}{2}$ -inch shaft, rolling in bearings on top of side frames. These side frames are spaced 17 feet 6 inches apart and are supported on footings 14 inches wide and 17 feet 8 inches long. The cable capacity of this reel gives a weight of 85 tons for the cable alone, and it will be obvious that this weight, plus the weight of the reel, supported on

two frames, between which there is no opportunity of lateral bracing, makes a difficult problem for the naval architect in taking care of the lateral distribution of this weight by suitable cross bracing in the hull itself.

As will be noted in one of the illustrations, the bracing, the knees and the framing in the way of this concentrated load are very heavy and very carefully designed. The problem was intensified by the fact that the draft of the lighter must be kept down to a minimum so that the shore end of the cable could be brought close in for easy transfer to the cable house.

In the arrangement plans, one side of the deck of the lighter is kept entirely clear, so that a cable can be picked up under run and a splice made on deck and then the cable dropped overboard. On the opposite side are arranged all leads for the winch, davits for boats, and arrangements for the derricks.

The construction of the cable lighter is very heavy. The sides and bulkheads are solid edge fastened and the two bulkheads are spaced so they come under the reel frames. Heavy deck beams support the fore and aft stringers upon which the deck is laid and corresponding keelsons are used to fasten the bottom planking. Heavy bitts at the corners provide means for towing.

The cable roller on the end of the lighter is the latest development for paying out or reeling in the cable. It consists of a series of eight fair-lead rollers supported in a steel frame resting on deck and extending over the end of the lighter to protect the cable from being cut by the lower corner of the lighter.

At the launching a delegation of officials of the Western Union Telegraph Company were present, and Louis M. Messner, one of the earliest employes of the company, acted as host and led the sponsor, Miss Mary Owensby, to her station.

The lighter glided beautifully into the Oakland harbor to the words "I chirsten thee 'Messner,' wishing you godspeed and good luck."

After the water tanks, cable roller and other heavy weights were lifted aboard the lighter was taken down



View showing four of the steps in splicing submarine cable, as laid in San Francisco Bay

to the wharf of the cable division of the Western Union, where the cable reel, donkey boiler, steam winch and attachments were installed.

One interesting feature was the purchase of the water tanks from the U. S. S. Nebraska, being dismantled by virtue of the disarmament conference at Washington. David W. Dickie was chief draftsman in the naval constructors' office at Moran Brothers Company in Seattle at the time the Nebraska was built there in 1906.

Heavy Derrick Equipment

The derrick equipment is heavy, as a lift of twenty tons has to be taken care of. Because of the large number of cables and the strong tidal currents in San Francisco Bay, these cables have crossed one another in several places. It is not uncommon to find that the cables of other companies as well as previously laid cables of the Western

Union Telegraph Company, have become bunched together in a spider web and the whole mass has to be lifted and untangled in order to make a repair.

At the present time the derrick is equipped with manila rope on the hoist and topping lift to take care of 2 to 5 ton loads. When it is rigged with plow steel wire rope and the reel engine connected to the topping lift and fall, a lift of 20 tons can be taken care of. The iron work bands are all fitted with eyes for the preventor back stays to insure the derrick against accident when handling heavy lifts. A steam capstan at opposite end from the derrick provides a means of handling the lighter in position on the job and lifting the heavy anchors.

When completely outfitted the lighter will have steel workboats equipped with outboard motors.

The available space in the interior of the lighter has to be subdivided into a large testing room, as the principal requirement, and in addition a complete layout has to be made to house and feed the crew, a workshop, tool room, rigging room, and store rooms for light and heavy gear.

Loading Cable

In loading cable onto the lighter reel, the derrick and reel end are brought up to the wharf whereon the cable spools from the factory have been landed. Anchors are dropped off from shore to hold the offshore end, and breast lines run to hold the inshore end. A spool of cable is set up on trunnions and the end of the cable taken to the reel, led out between the spokes, and electrically connected to the testing instruments.

The cable lighter is then drawn away from shore and the reel started to wind on the cable, the slack of the cable passing through the water. The outer layer of wires are bonded through electrical instruments to the lead covering, and should a leak occur current would flow through the short and be indicated through the instruments on the Wheatstone Bridge principle.

When the total cable on the spool is transferred to the reel on the cable lighter, it and the next spool of cable are tested, making splice wire by wire until each of the 104 wires shows clear. The two ends must then be spliced, an operation that requires great skill and meticulous care to insure it being a success. The uniform success of the Western Union crew testifies to the

experience gained from years of effort. To make the splice requires 18 feet of cable.

The steel wire armor is unwound three strands at a time and the piece of lead covered cable cut off. About two feet is required to make the joint and the wires are uncovered for about four feet. When the testing is finished the lead covered cable is placed in position and lined up straight. A lead sleeve about $\frac{1}{2}$ inch larger in diameter than the lead armor and about 2 feet long is slipped over the cable. Each wire is fitted with a paper tube about 3 inches long, twisted together with its mate, soldered, and the paper tube slipped back over the splice.

(Continued on page 188)



Three views of the cable laying lighter Messner in operation. Top, lighter reeling cable from wharf; center, ready to start paying out cable across bay; bottom, view on board lighter showing one end of reel, winch, and donkey boiler.

THE FLETTNER ROTOR SHIP

Some Notes on Construction and Performance of the Latest Marine Drive From Actual Observations and Information Gathered in Germany

By JOHN H. PATTERSON

TO date the rotor ship Buckau of the Hanseatic Motors Shipping Company has had several trial trips, but on none of these have wind conditions been such as to give conclusive proof of the effectiveness of the new idea at what might be termed full speed. Hence, though the experimental results obtained at the University of Goettingen, with models, have been reproduced successfully on the actual ship at low speeds, the behavior of the ship in strong winds and rough seas is yet to be seen. As in other original applications of existing things in a new and untried way, very much over-enthusiastic comment has been made in the daily newspapers. The Flettner representative at Krupp's has told me that this is undesired advertisement from their viewpoint because of the false impression created not alone in the mind of the engineer, but also in that of the layman. They would rather have proceeded a bit slower and had nothing but facts stated for which proofs were available. The Flettner engineers realize that there are many things to be proved, but they are firmly convinced that their system is correct and workable. This latter has been proved.

Magnus Effect

The basic idea involved in the Flettner rotor ship is now about 73 years old, having first been published in Poggendorfs Annual in 1852 by Dr. Magnus of Berlin. It is known as the Magnus principle and is familiar to people acquainted with gunnery practice and the effect of air currents on revolving shells, though other names may be applied to it.

Dr. Magnus originally expounded the principle as a result of his investigations into the erratic movements of shells and bullets, and it has remained for Anton Flettner to make practical application of the discoveries of the former. Dr. Flettner has conducted a number of experiments at Goettingen with models of the schooner Buckau rigged as a top-sail schooner, as originally built in 1920 at Krupp's, and also as she now is with revolving towers.

Practical Experiments

These experiments showed that a much greater effectiveness was se-

THE ROTOR SHIP

Probably no invention of recent times has received so much space in the daily newspapers and technical magazines as the Flettner rotor ship. Much of the publicity on this development has obviously been of the variety made up from whole cloth to fill space and create a sensation, and as is shown in the accompanying article, much of this has been very objectionable to the inventors and the experimentors, who are trying to effect a useful drive for the merchant marine.

The article reproduced herewith is taken from the "Ship's Bulletin" of the Standard Oil Company (N. J.), Marine Department, and is published through the courtesy of Robert L. Hague, general manager of that department. The writer of the article, John H. Patterson, will be remembered by the marine fraternity as chief engineer on several Standard Oil tankers, and possibly better remembered by the older marine fraternity as the bright young man who annexed to himself the charming daughter of James H. McKinley of San Francisco and Portland.

Mr. Patterson having been in Germany for some time has been in position to get first-hand information. It will be noted that his remarks cover only the experimental results with the Buckau. They evidently antedate the trip of that ship across the German ocean to Scotland. Insofar, however, as his remarks apply to the lack of data under full speed conditions they would still seem to hold good, as we are informed that the great part of the passage referred to was made under diesel power, the weather being too stormy to try out the rotors.

cured from the same wind with the revolving towers as with the sails. Figure 1 shows how the wind pressure is built up on one side of the towers and an area of low pressure

exists on the opposite side. It has been found in the case of the Buckau that at the most favorable relationship of wind and peripheral velocities the angle of maximum effect is about 110 degrees with the line of direction of the wind. From this course (110 degrees) the angle can be decreased until a course within 30 degrees of the wind can be made with good effect. On the other hand, if the wind is more than 20 degrees abaft the beam the effect is reduced in proportion to its approach to a direction directly aft. This is just opposite to the effect produced on a true sailing ship because their best work is done when the wind is considerably more than 20 degrees abaft the beam. It is true that the rotor is almost equal in effectiveness to the true sails when the wind is directly aft but it falls off in effectiveness a little faster as the astern position is approached than a true sailing ship does, and to make headway by using the rotors with a stern wind it will be necessary to tack and bring the wind more nearly to the angle of 20 degrees abaft the beam.

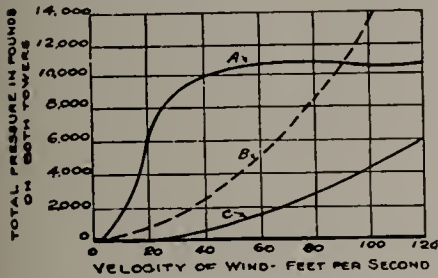
Naturally in this maneuver there is a point reached where the distance on the true course ahead can be more economically made good if some help were obtained from a propelling motor. This combination use of the rotors and the propeller will enable the ship to make the required speed ahead, not alone when the wind is astern but also when the wind, though in the most advantageous quarter, is not strong enough. Therefore, although the fact remains that this type of ship depends almost wholly on the wind for propulsion and though it utilizes the wind force to much greater advantage than the usual sailing ship, it cannot be said to be able to move in any chosen direction of course without regard to the wind as a true motor or steamship can.

It is also true that as the wind increases in velocity for an ordinary sailing vessel, the increase in pressure on the sail varies in a curved line slightly inclined upward as shown by curve B in Figure 2. The rotor ship with the towers at rest shows a lower pressure for a similar wind velocity as indicated by curve

C. A very large difference is noticed when the towers are revolving, however. The increase in pressure and hence in useful work is much more rapid, soon reaching a point, as roughly illustrated by the curve A, where the curve flattens, and further increase in the wind velocity gives little increase in pressure on the tower.

Route Considerations

It is my belief that in planning the use of such a type of ship, the route on which she will trade must



Curves showing effect of rotors with varying wind velocity

be carefully considered, and only such a route as an auxiliary type of craft could profitably use, should be chosen. In other words, it appears to be a compromise proposition just as such auxiliary ships always are, but one which has the advantage as before stated of using the wind force more profitably than the old style ship. A glance at the U. S. hydrographic charts will show how far out of a steam or motor ship course between two ports a sailing ship must go. The rotor ship would, no doubt, reduce this distance very considerably. The captain of such a ship would be compelled to use good judgment in selecting his course and also in determining when to use the propeller rather than make long tacks at a wide angle to the true course.

The Buckau

The test ship Backau has the following principal dimensions, and Figure 3 shows the vessel in profile: Length B. P.147.6 feet Breadth 29.4 feet Depth 13.4 feet Draft loaded 11.8 feet Deadweight tons 600 Sail area (original) sq. ft. 20,228.80

A feathering propeller is fitted and she is driven by a 6-cylinder U-boat type diesel engine developing 160 B. H. P. This drives the ship about 7 knots. A 45 H. P. 2-cylinder diesel-driven dynamo is located in the port side of the engine room for furnishing power for the various motors and lights. The exciters for the generators are directly coupled to the shaft. The speed of the tower

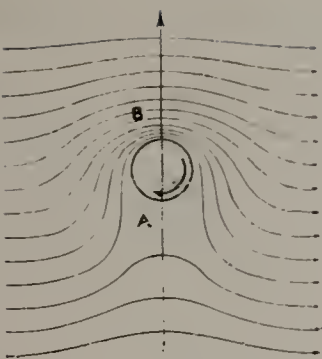


Diagram showing the nature of the so-called Magnus effect

motors is controlled through the bridge by handwheels and suitable shafting through a control box fastened up under the deck. The system is known here as the Leonard type, so I presume it is similar to the well-known Ward-Leonard system in the United States.

Experiments have shown that the best effect is secured when the peripheral speed of the towers is about equal to the wind velocity, but in actual practice this has not definitely been proved as yet. The particulars of the towers are as follows:

Height	48.5 feet
Diameter	8.8 feet
Weight	3 tons
R. P. M.	135 at full speed
Motors (2).....	10 H.P. for each tower
R. P. M.	810

Figure 4 shows the general construction of the tower. It will be noted that the inner supporting structure, which is a circular conical tower, is built of heavy steel plate. At the upper end the weight of the whole revolving part is supported on a Kingsbury type thrust bearing. This is lubricated with oil under pressure supplied by a motor driven gear pump at the base of the tower. A pump tank, motor starting box, etc., are also located here.

The drive of the tower is through a helical reduction gear similar to those used on steam turbines. Two

- (A) Side on which direction of wind and circular air currents oppose each other, creating a pressure.
 - (B) Side on which direction of wind and circular air currents coincide and create partial vacuum.
- Arrow indicates direction of motion of vessel.

wheels are used with the helix cut to opposite hands on each.

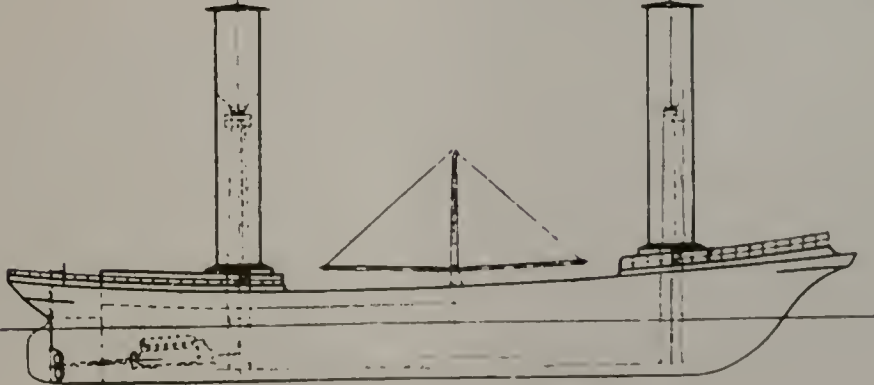
On the Buckau the supporting tower is carried down to the bottom of the ship as the original steel deck was not strong enough. Below the deck the forward tower structure is used as a fresh water drinking tank. The aft tower is used for fuel oil.

On a ship built expressly for the Flettner towers, the latter can be located over bulkheads, or, if in a tanker, over the intersection of the fore and aft and the athwartship bulkheads or a cofferdam, so that there would be no underdeck structure necessary except, perhaps, special brackets.

I had hoped that before this I would have had an opportunity to make a trip with the ship when a strong wind was blowing, but although several trips have been made only light breezes have been encountered and little valuable information is available as to actual conditions. She is still fitted with the usual sails. They will both be taken to the measured mile course nearby, and comparative tests made under similar wind conditions. No authentic data are available at present for such a sailing ship on which to base a comparison of the actual superiority of the rotor ship.

The meager results obtained from trials to date are given below:

Velocity of wind, 20.5 feet per sec-



Diagrammatic profile of the experimental rotor ship Buckau

ond; speed of ship, 6.3 knots.

Velocity of wind, 12.1 feet per second; speed of ship, 4.8 knots.

In both cases a cargo of 350 tons of coke was aboard, giving draft of 11 feet. The tower revolutions were 120 per minute and 10 horsepower was used for each, plus the power for the two small motors.

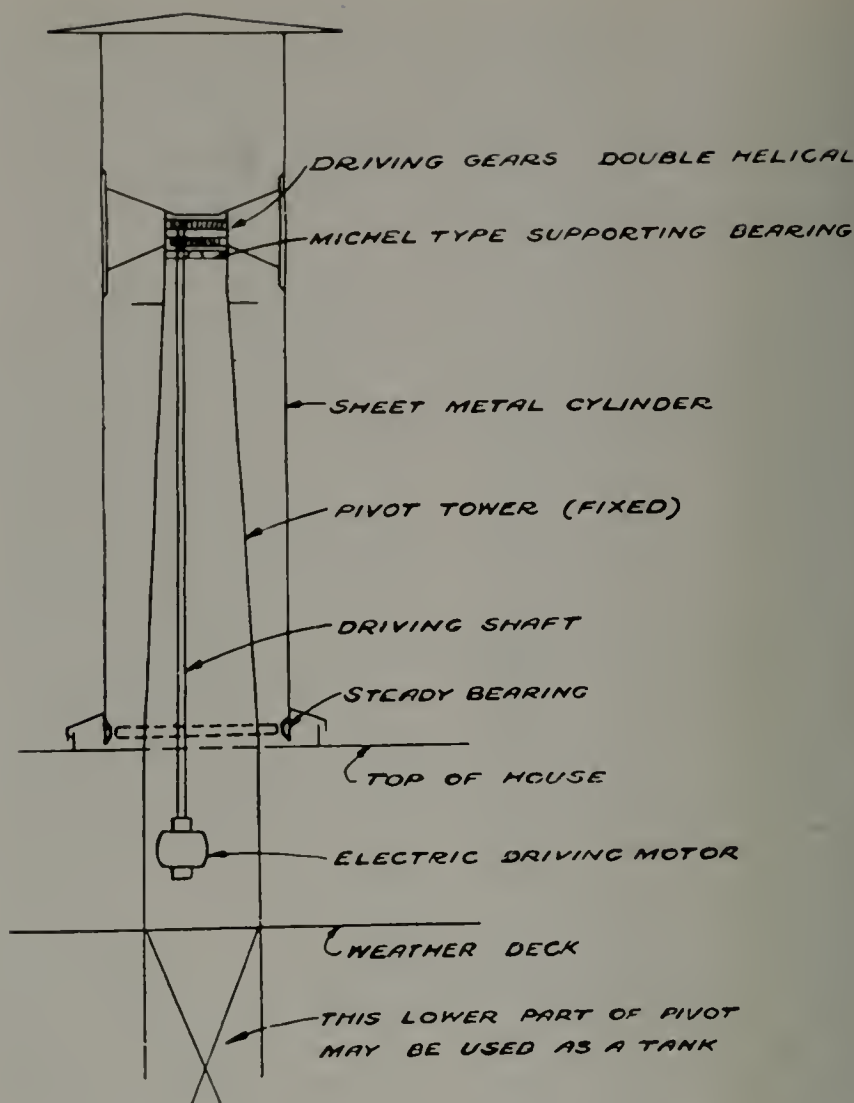
I am informed that for a sailing ship of the Magdalene Vinnen class the present sails and masts would be replaced by two towers 138 feet high and 14.8 feet in diameter, affording an estimated speed of about 10 knots. The principal particulars for this vessel are as follows

Length over-all	286' 5"
Length B. P.	252' 7½"
Breadth	44' 1½"
Depth	21' 7⅞"
Draft (loaded)	18' 11⅛"
D. W. T.	2400
Displacement	3750
Sail area, sq. ft. (approx.)	19,800
Number of masts.....	5
Speed under sail, knots	
(for comparison)	6.5

The rig of this ship is peculiar. The first and third masts are rigged with schooner sails. The second, fourth and fifth masts have the regulation schooner rig with the triangular shaped topsail. Four jib sails are used.

For any size ship only two towers are used. The power they develop varies with their height in a increasing degree; that is, the higher the tower the better the effect. The proportion to diameter is between 5.5 to 6 to 1. For the Buckau it was calculated that about 2½ horsepower effect would be obtained for each square meter of projected tower surface. For the higher towers this will probably be increased, though I cannot find out exactly how much. A wind velocity of 8 miles per hour is used in the calculations. Suppose, for example, a freighter of about 12,000 deadweight tons with cruiser stern and about 489 feet over-all were fitted with Flettner towers. It has been estimated that on such a vessel two towers about 112 feet high by about 20 feet in diameter might be used. For a speed of 9 knots each would require an 80 horsepower motor according to the Flettner scheme of design. If a speed of 11 knots were required the towers would be about 131 feet by 24.6 feet and 150 horsepower motors would be used. Fast running twin screw motors would be fitted to help the towers as outlined previously.

In developing the plans of a freighter, and no doubt a tanker,



Diagrammatic detail of the tower construction on the Buckau

a considerable departure from the usual house arrangement would, perhaps, be made. The pilot house and bridge would be built into the house at the base of the forward tower. This brings it rather low and far forward. No midship house would be used as all rooms usually placed there would be built into the long forecastle. The reduction of the engine sizes would probably permit of constructing the main tanks considerably further aft.

KOLSTER COMPASS

(Continued from page 160)

installations of radio compasses are also very active. The large tanker John D. Archbold, Standard Oil Company (N. J.), now has the Kolster compass, and results have been so satisfactory that four other vessels belonging to this company will be equipped immediately. These vessels are the William Rockefeller, E. T. Bedford, J. A. Moffit, Jr., and Benjamin Brewster.

In addition to these vessels, com-

passes are to be installed on the army transports Chateau Thierry, St. Mihiel, and Cambrai.

During the past thirty days, these compasses have been installed in the following vessels: steamship Virginian, of the American-Hawaiian Steamship Company; the cutters Shawnee and Tampa of the United States Coast Guard; steamship Kewanee, Associated Oil Company; and the steamships America and Western World of the United States Shipping Board.

On the Pacific Coast, the Standard Oil Company (Calif.) has, within the past few days, ordered five additional Kolster compasses, this bringing the total number in use in the Standard Oil fleet up to 17.

The General Petroleum Company has ordered another compass for its fleet for the steamship Lio, recently taken over from the Shipping Board.

The Federal Telegraph Company owns the basic patents on the radio compass, which was invented by its research engineer, Dr. F. A. Kolster.

CAVITATION AT HIGH SPEEDS

A Timely Paper on an Interesting Subject Read before the Thirty-second Annual Meeting of the Society of Naval Architects and Marine Engineers

By CAPTAIN E. F. EGGERT, C.C., U.S.N.

IT has been the opinion among naval architects that, when propellers reach a certain degree of overloading, a phenomenon known as cavitation begins to make itself felt and becomes more important as the overload increases. This cavitation has been described by some writers as the formation of cavities on the backs of the blades; by other writers as cavities on the face, or face and back; and other descriptions have been given.

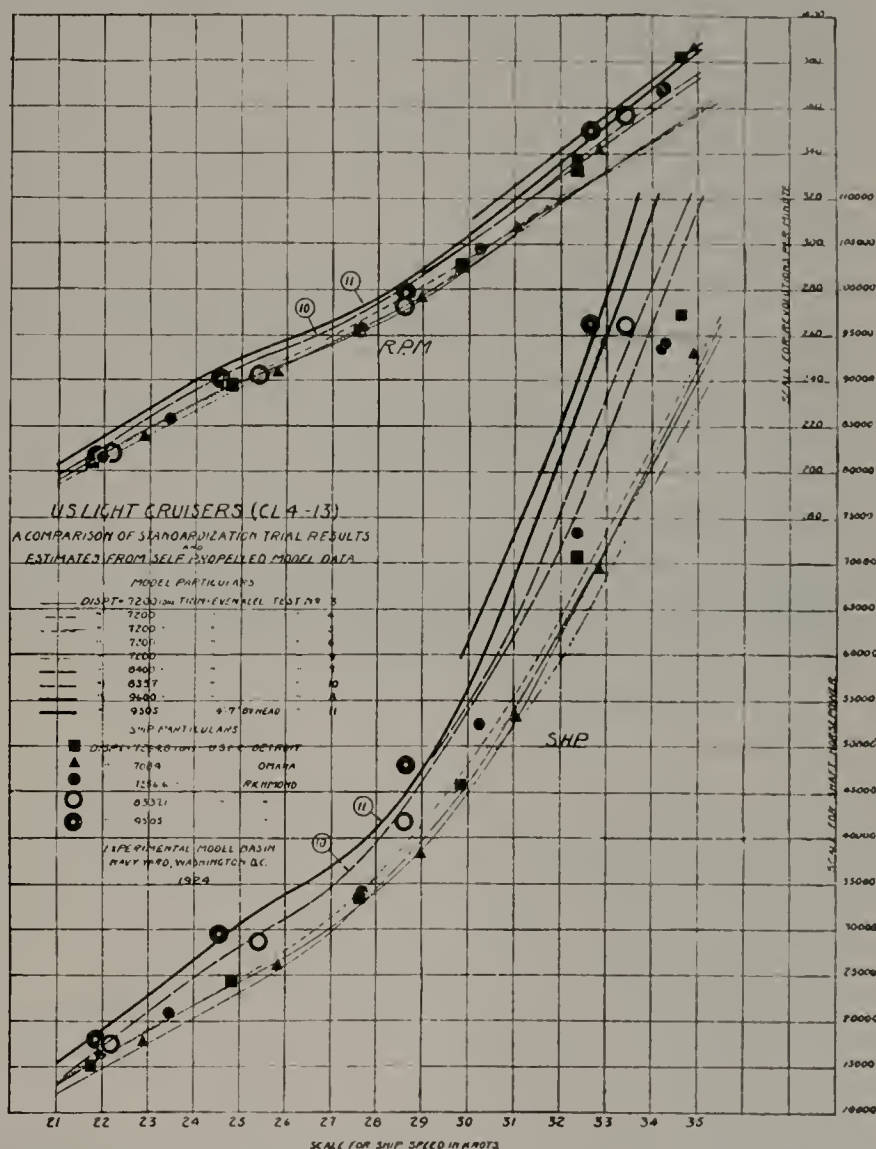
Under certain exaggerated conditions, this cavitation has been experimentally produced and been made visible to the eye, its chief characteristics then depending on the particular exaggeration of the conditions.

Various authorities have assigned a tentative limit for normal design of propellers at which cavitation might be expected to begin, this limit, in the case of one well known authority, being given as 10,000 feet per minute tip speed.

With this assumption, it was fully expected that the propellers for the destroyers built during and since the war, and also those for Scout Cruisers 4 to 13, would show decided effects of cavitation; these effects are defined as a progressive divergence between trial powers and revolutions at given speeds, and the corresponding powers and revolutions deduced from model experiments.

These divergences in the cases of the destroyers at higher speeds were quite large and were extensively discussed in Model Basin reports in 1921 and earlier.

The later destroyers having a tip speed of about 12,000 feet per minute and the scout cruisers a tip speed of over 13,000 feet per minute, it was expected that the standardization trials of the latter would indicate equally great divergences; and it was surprising to find, when three of these vessels were standardized, at their contract displacement of 7200 tons, that the divergences were relatively small; in fact, in the case of the Omaha, so small as to be nearly non-existent. Still more surprising, however, was it to find that when standardizing at deeper draughts, corresponding to about 8300 tons and 9500 tons displacement, they showed less divergence from the Model Basin results, and in the case of the deepest draught almost none. These latter trials were of the Richmond, which had on light draught shown the greatest divergence.



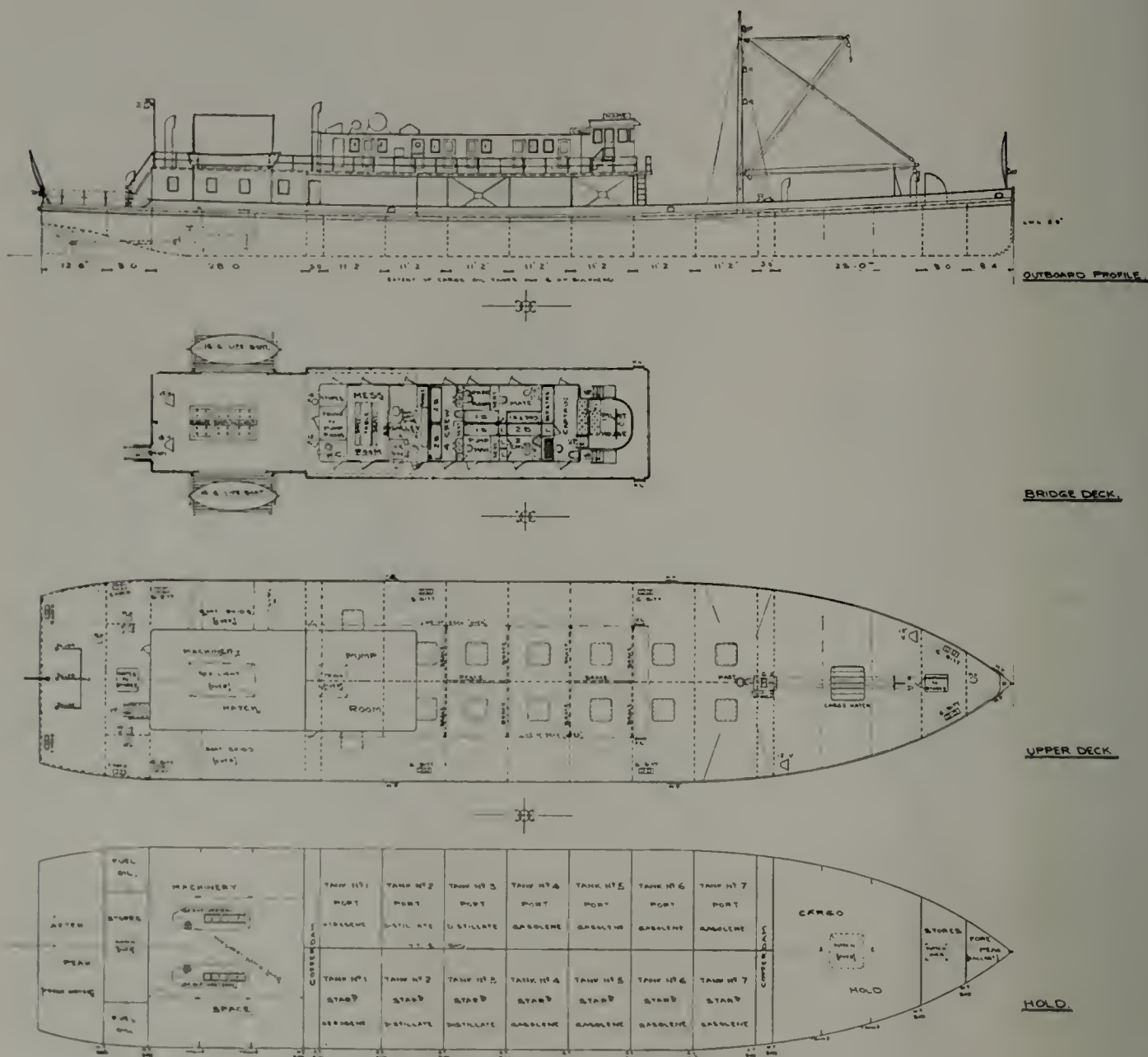
These results were so remarkable that the Model Basin experiments were repeated a number of times. In all, five separate series of runs were made with the model self-propelled at light draught, and two sets each at the deeper draughts. The curves shown are the results of the Model Basin experiments and indicate, by their scattering, the degree of precision that may be expected from such work. The spots plotted are the trial spots as reported by the trial board.

It is evident that cavitation, as it is usually described, cannot be the cause of the differences shown in the case of these cruisers, for had there been cavitation, which means a departure of the streams of water from the surfaces of the propeller blades, such cavitation would have become worse at a given speed as the displacement increased, because the thrust of the propellers would increase and therewith the slip and slip angle. On the contrary, the divergence be-

(Continued on page 38, Ad Section)

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

DIESEL TANKER FOR RIVER SERVICE



Outboard profile and general arrangement of the new diesel-driven river tanker now being built at the Moore Dry Dock Company, Oakland, for the Union Oil Company of California.

A complete description of this tanker appeared in the March issue of Pacific Marine Review.

She is constructed on the Isherwood system and is

designed to carry 3500 barrels of oil and 15 tons of package goods on a draft of 5 feet 6 inches.

Her over-all length is 175 feet and her molded beam 36 feet. She will be driven by two 165 horsepower 4-cycle Western-Enterprise full diesel engines.

The cargo will be handled by four Northern rotary pumps.

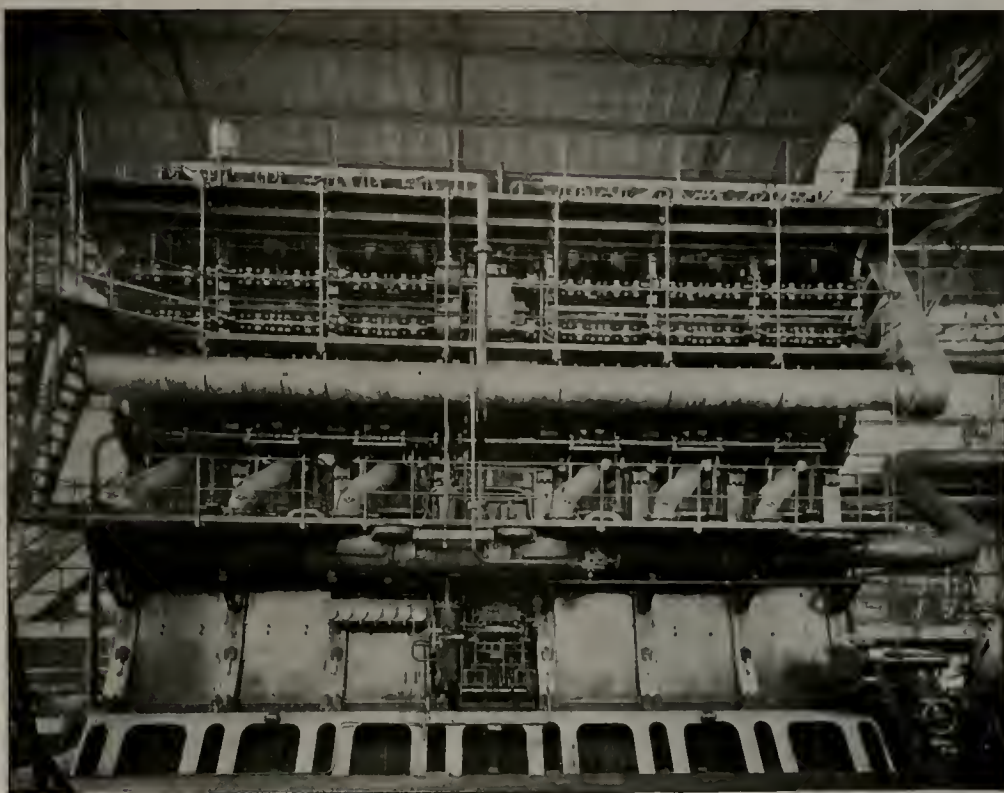
ENGINE FOR MOTORSHIP GRIPSHOLM

THE motorship Gripsholm will be the first passenger liner equipped with double-acting four cycle diesel engines of the Burmeister and Wain type. The hull is building at the yard of Sir W. G. Armstrong, Whitworth & Co., Ltd., Newcastle-on-Tyne, England, while the order for the machinery was placed with Burmeister and Wain at Copenhagen.

The motorship Gripsholm, which is building to the order of the Swedish-American Line of Gothenburg, will be the first motor-driven passenger and mail ship in the North Atlantic trade.

Description of Machinery

The complete machinery is building at Burmeister and Wain's engine works at Copenhagen and consists of two 6-cylinder main diesel engines, double-acting, and on the 4-cycle system, which this firm has always adhered to, developing in all 16,300 indicated horsepower at 125 revolutions per minute under ordinary working conditions at sea. The necessary compressed air is taken from three separate diesel compressors, each having sufficient capacity for supplying the air to one of the main engines, and accordingly when at sea it will only be necessary to run two of the compressors, with the third acting as reserve.



The largest marine diesel engine in the world. One of two 6-cylinder, double acting, 4-cycle Burmeister & Wain engine each developing 8150 indicated horsepower. These engines are being installed in the motorship Gripsholm, now building at the yard of Sir W. G. Armstrong, Whitworth & Co., Ltd., Newcastle-on-Tyne, England.

Special means have been taken to fully balance the main engines as well as the compressor engines to avoid vibrations of the hull. The horsepower of each of the diesel compressors is 800 indicated horsepower. These compressors, in addition to supplying injection air, also act as maneuvering compressors for supplying the necessary maneuvering air.

The diesel generators are also

fully balanced in order to avoid hull vibrations.

The total horsepower of both main and auxiliary engines will be 20,650 indicated horsepower.

The Shop Trial of the Double-Acting Engine

It will be remembered that the order for this machinery was an outcome of the results obtained from experimental work carried on for more than two years, during which Burmeister and Wain built an experimental engine of the double-acting type with a single cylinder, developing 1000 brake horsepower.

The first main engine for the motorship Gripsholm has undergone five successful shop trials.

During a 48-hour test the following results were obtained:

Number of revolutions, 124.6.

Brake horsepower, 6858.

Indicated horsepower, 8655.

Mechanical efficiency, 79.24%.

Fuel oil consumption, average per hour, 1189 kilos.

Average fuel oil consumption per indicated horsepower hour, 137.3 grammes, equal to 0.302 pounds.

Average fuel oil consumption per brake horsepower hour, 173.3 grammes, equal to 0.381 pounds.



The crankshaft of one of the Gripsholm's engines

DIESEL ENGINE INDICATOR DIAGRAMS

By ROBERT C. PAIRMAN, Chief Engineer

INDICATOR diagrams taken from a diesel engine in the ordinary manner suffer from several shortcomings. If the indicator gear is driven off the camshaft through a train of gear wheels, a slight amount of wear on the teeth distorts the diagrams to such an extent as to render them useless for purposes of calculating indicated horsepower.

Indicator diagrams taken on the test bed under the very best possible conditions to insure accuracy cannot always be implicitly relied upon. The type of indicator driving gear in use upon steam engines no doubt has its defects, due to errors introduced by the links, but the ends of the stroke are timed relatively to the engine with fair accuracy. Unfortunately this type of gear is somewhat difficult to incorporate in the design of a diesel engine having an enclosed crankcase. Figures 1 and 2 show diagrams distorted due to wrong timing caused by backlash of gear wheels.

The most important period of the stroke, as far as fuel valve timing is concerned, is the period during which the fuel is being admitted. This is shown by a very short piece of the diagram when taken in the ordinary manner. In order to get a better idea of what is happening during this period, it is desirable to spread out this part of the diagram over a greater length. With practice, this can be accomplished by pulling the cord by hand as the indicator pencil rises. Figure 3 shows a diagram taken in this manner, alongside an ordinary diagram.

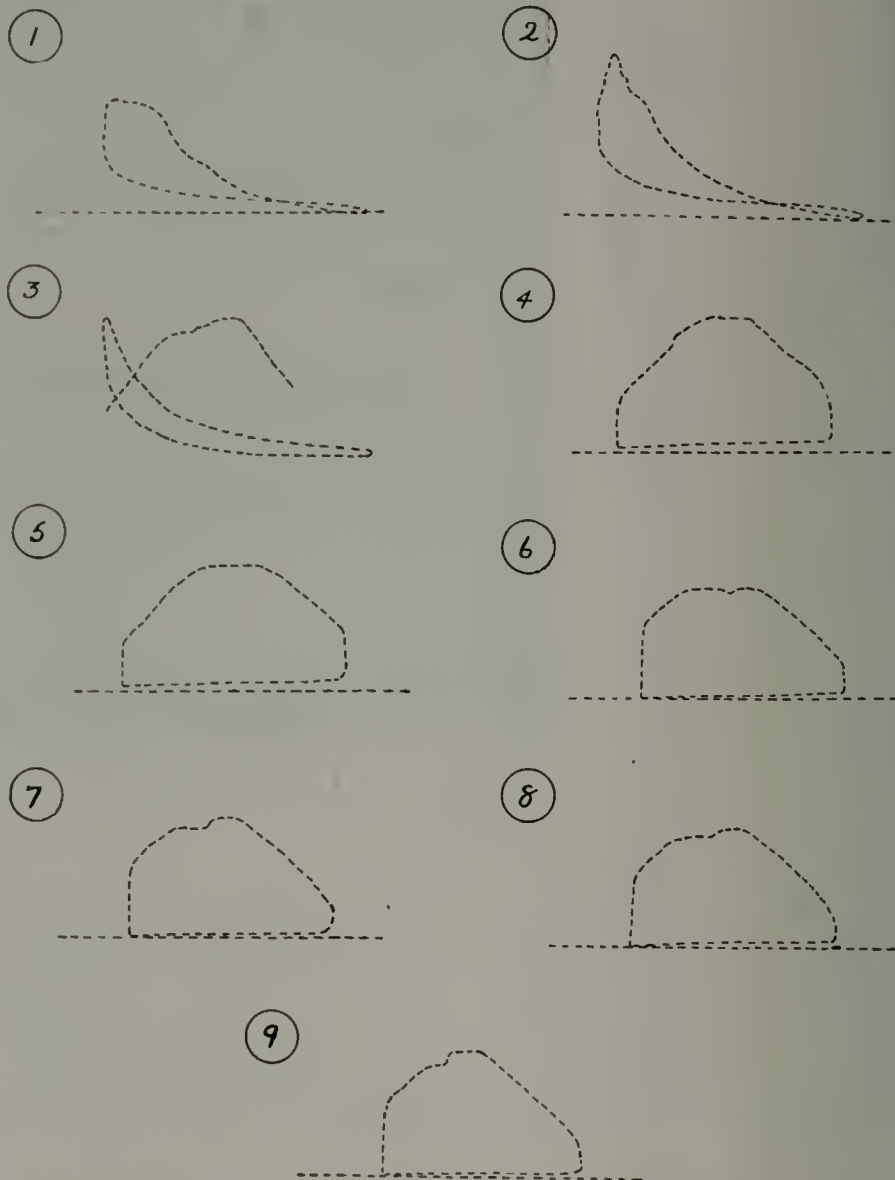
Another method, which is easier, requires less dexterity and gives a diagram timed in advance of the ordinary diagram, is to drive the indicator drum from the exhaust push rod of a suitable nearby cylinder. This gives a better diagram for comparison from time to time. Two diagrams taken in this manner are shown in Figures 4 and 5.

Figure 6 shows a diagram in which the firing was a little late, accompanied by an appreciable knock.

Figures 7 and 8 show the effect of slight alterations to the roller clearance in order to alter the point of opening.

Figure 9 is a diagram taken off the same cylinder at reduced speed.

Figure 11 shows a scale which was plotted off the exhaust cam to

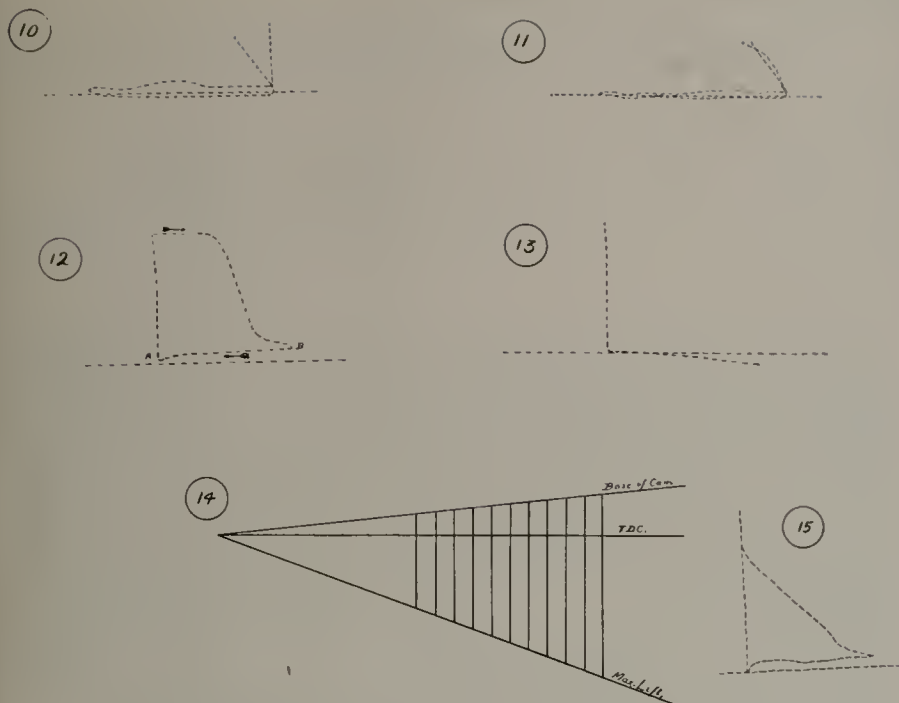


give the position of the top dead center on the displaced diagrams. Perpendiculars are dropped from the ends of the displaced diagram, and the diagram is applied to the scale in the same manner as an ordinary steam diagram is applied to a dividing scale.

The conditions during exhaust and induction can best be examined by means of a light spring diagram taken with a large sized steam indicator. Diagrams of this description are shown in Figures 10 and 11. Figure 10 is taken while going full ahead, and the effect of the exhausts of neighboring cylinders can be plainly seen. Figure 11 is a diagram taken while running at reduced speed.

Figure 12 is a diagram taken from the exhaust push rod of the cylinder that is being indicated. The valve starts to open at A, is full open at B, and closed again at A. The diagram has a flat top, because the spring was too weak to register the pressure at the instant that the exhaust valve opened, but this could be remedied by putting a heavier spring in the indicator.

A good method of balancing the load between the various cylinders has been found in keeping the exhaust temperatures as even as possible. For this purpose, reliable pyrometers are necessary. The writer devised a simple expansion type which worked very well. An experimental instrument was made



and tried out at sea, and worked so well that a complete set was made, so that an instrument could be fitted to each exhaust bend.

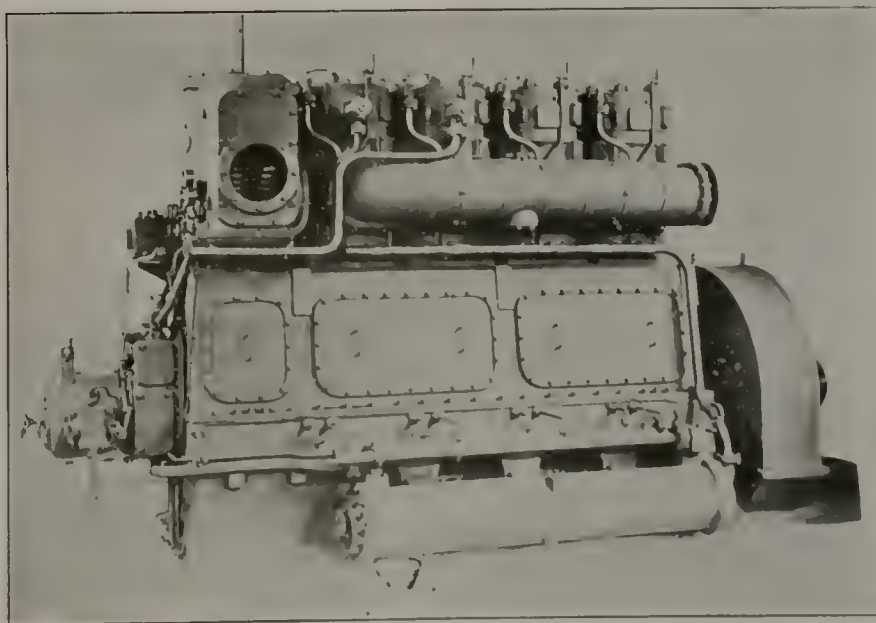
It is necessary to have a reliable nitrogen filled thermometer, which can be placed alongside the pyrometers occasionally for checking and adjusting them. Adjusting is quite a simple matter and requires nothing more than a screwdriver. A walk round the cylinder tops is all that is necessary in order to make sure that no cylinder is overloaded.

Failing pyrometers, the pressure at the instant that the exhaust valve opens is a good check on exhaust temperature, and this can best be arrived at by a diagram after the type of Figure 15, which was taken with a heavier spring than Figure 12. It is a well established fact that the absolute pressure of a gas varies as the absolute temperature, if the volume is constant, and as the volumes of the various cylinders at the instant the exhaust opens may be assumed to be constant, the pressure read where the expansion line cuts the vertical line at the top of the diagram, which is the point at which the exhaust starts, may be taken as a measure of temperature and can be used as a check on the py-

rometers if such are fitted. Assuming the ratios of expansion in all the cylinders to be equal, and rates of heat transfer to jacket water to be alike, etc., equal amounts of fuel burned in the various cylinders should give equal exhaust pressures. A diagram taken off the inlet valve is shown in Figure 13. It will be noticed that there is a slight drop below the atmospheric line, and a

very slight degree of supercharging, as the pressure rises very slightly above atmospheric as the valve closes.

From the foregoing, it will be seen the indicator can be made a most valuable instrument on board a ship fitted with diesel engines. Quite a lot of assumptions have to be made, but in the absence of more perfect knowledge and improved instruments, assumptions and comparisons assist greatly in the running of a diesel plant. Indicator gear is not as a rule fitted to blast air compressors, and the best guide that can be obtained to the running of these is the readings of the pressure gauges connected to the various stages, and the temperature of the air before and after it passes through the inter and after coolers. Thermometer pockets affixed to the outside of the various pipes and passages, while not expected to give the actual temperature of the air passing through, at least give a temperature which can be recorded and compared from time to time. The man running a diesel plant has no time at his disposal to pull things to pieces to see how they are getting on, and must use every device he can think of to enable him to ascertain when a certain part needs opening up.



A new type Sulzer engine of 250 brake horsepower. This engine is of the 2-cycle trunk piston type, with airless injection. It is very simple, of comparatively light weight, gets rid of all compressor troubles, and lends itself to economy in construction costs.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

LIGHTERAGE ON SAN FRANCISCO BAY

Some Notes on Towing and Barge Problems

THE Bay of San Francisco, now claiming the second place to New York in total volume of goods handled by water, presents many interesting problems in water transportation, transbay and between various ports on the east and west shores of the harbor.

As has been often pointed out in Pacific Marine Review, there are many ports on the shores of San Francisco Bay, a number of which are growing very rapidly. The chief field for the lighterage business is between the waterfront of San Francisco and what are known as the East Bay cities—Oakland, Berkeley, Alameda, and Richmond. The haul is from 5½ to 8 miles in length, with constant deep water on the San Francisco side and with long wharves on the East Bay side to insure approach and landing at all times for flat bottom barges and shallow draft towing launches.

There is also a very large business in barge tows to the delta of the San Joaquin and Sacramento rivers, which empty into Suisun Bay, the upper end of San Francisco harbor. This haul would average about 35 miles each way.

In the early days of this business, deep water sailing ships were towed up the rivers as far as Stockton for cargoes. As the size of vessels increased and steam came into use, with regular schedules to be maintained, it became the custom for all deep sea vessels, except those chartered for full cargoes of grain at Port Costa and the steamers from



The towing launch Pabco of the Berkeley Transportation Company, Berkeley, California

Hawaii with large cargoes of sugar for the refineries at Crockett, to make berth only at the San Francisco waterfront and to transfer parcels of cargo for East Bay points and river points to lighters, which would be towed by small steam tugs.

The business of the tug and lighter grew with the growth of the port, and its importance brought to it a great deal of study from competent marine engineers and naval architects, who developed special

types of wooden hulls for light draft heavy capacity towing.

For this work also there was developed a special type of high duty distillate engine with special mechanical reverse gear and clutch, these developments on the Pacific Coast setting the standard in this particular type of marine installation for the whole of the United States and building up on San Francisco Bay a considerable manufacturing plant doing a large business



Our picture illustrates the excellent cooperation that exists in San Francisco harbor between industrial plants and lighterage companies. In this instance The Paraffine Companies, Inc., provide a very large portion of the freight handled by the Berkeley Transportation Company. The Berkeley Transportation Company names their best launch with the trade name of The Paraffine Companies, Inc., and builds a lighter especially adapted for handling Pabco products.



Landing at Port of Mountain View, Lower San Francisco Bay

locally, nation-wide, and foreign in supplying this type of engine. During the last ten years this same plant has largely been brought over to the manufacture of diesel engines for this type of craft, using the same highly efficient mechanical reverse with clutch, and thus making possible a one-man control of the entire towing launch.

Towboats for this purpose are now built in standard hull types in sizes from 30 to 64 feet in length and with diesel engines running from $7\frac{1}{2}$ horsepower to 300 horsepower in single units.

There is hardly a time, night or day, that one can cross San Francisco Bay without seeing many of these towing launches in operation with a tow of from one to four large flat-bottom barges.

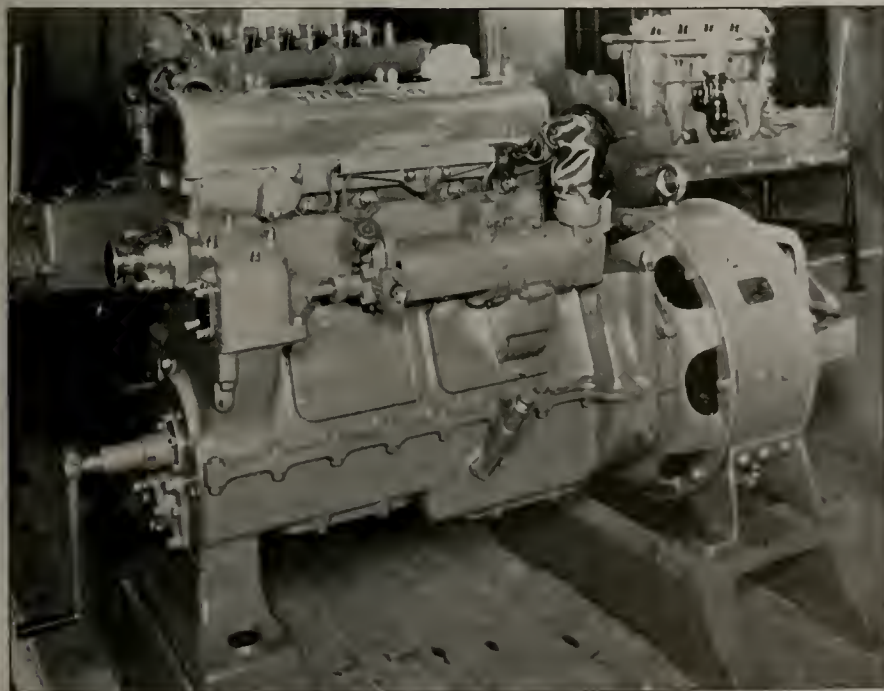
The first cost of the diesel engine is considerably higher than the gas engine of the same power, but the difference in operating expense due to lower fuel cost and to the better regulation of fuel consumption is so great that the additional capital investment is easily amortized in a comparatively short time. The diesel, of course, for tow purposes has the additional advantage in comparison to the gas engine that it has

a much higher uniform torque, especially at low speeds, and its greater weight gives the hull in which it is operating better traction (to use a railroad term).

Recently a representative of Pacific Marine Review conferred with several of the principal workboat operators regarding the actual operating advantages of the diesel as compared with the gasoline engine. The general consensus of opinion seemed to be that the diesel can do the same work at about one-quarter of the fuel cost. That is to say that operating costs for equal work in the case of any of the standard diesel engines are 70 to 80 per cent



The San Francisco Bay steamer South Shore being lengthened for greater capacity at the yard of A. W. de Young Boat & Shipbuilding Company, Oakland, California



The Hall-Scott marine gas engine exhibit at the recent Motor Boat Show, New York. The generator, direct-connected to the engine in the foreground, is a Westinghouse direct-current dynamo, especially designed for yacht service.

less than those for gas driven engines. Crew and depreciation, management, insurance, and overhead are about equal in both types.

There have been many conversion installations, in which local and eastern built diesels have been installed in place of the gas engines, and in every case the resulting economy has more than justified the investment.

Since the development of Oakland's modern port and the deepening of approaches to her piers, a new problem has come up for the operators of steamers and the towing and lighterage companies. The question now is, with any steamship company, whether it is better to carry the freight across the bay in the steamer's hold or to transfer to lighter and absorb the lighterage charges in the freight bill; for it is now customary with the majority of the freight lines running into San Francisco to take consignments of freight for Oakland, Berkeley, Richmond, or Alameda at the San Francisco rate. The problem, of course, resolves itself into

the adjustment between the lighterage rate for freighting across the bay and the amount of cargo consigned to a certain point. For instance, it might pay a steamer of 5000 deadweight tons capacity, if her schedule permitted, to make the trip across the bay and berth at Oakland with 250 tons of freight; whereas a large 12,000-ton intercoastal liner, working on close schedule, might find it did not pay to make the trip across with 1000 tons of freight.

The working out of this problem, as it is shown by the figures, is one of the strongest proofs of the tremendous increase of water-borne business in San Francisco harbor. The entrances and clearances in the harbor of Oakland are increasing at a very rapid rate. The figures show more than 150 per cent increase in the last eight years. At the same time, the towing and lighterage business across the bay is increasing even more rapidly.

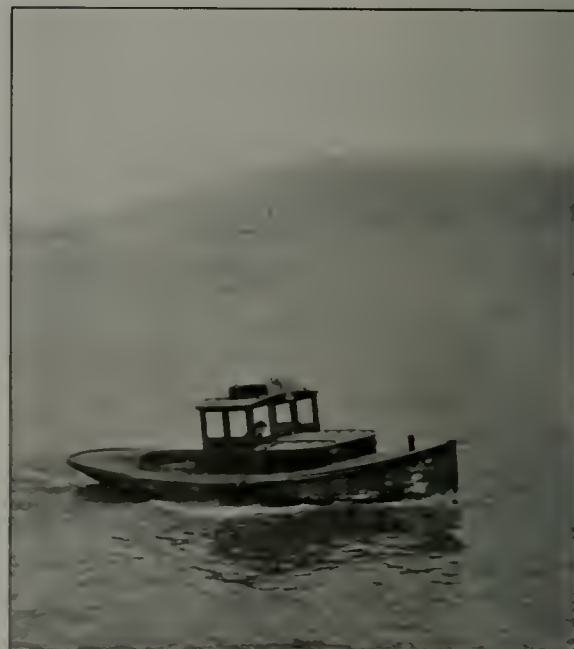
There are many items of cost in the moving of a large steamer from one berth to another, which are not ordinarily thought of except by experienced operators. If the vessel be a steamer, there is the cost of

fuel consumed in warming up and making ready; the cost of one or more attendant tugs; the cost of a bay pilot; the upsetting of schedules due to crew making mistakes in berthing of vessels; and the extra stevedore expense, as the stevedore gangs are paid when standing by and would probably travel with the vessel across the bay. Very often tides and other causes would make for several hours' delay in the transfer of the ship, and the general wear and tear item increases with every additional berthing. So that all things considered, the big freighter has to have quite a consignment of material for East Bay points in her holds before she is justified in making the trip across.

Many fertile minds are working on this problem. One large workboat and barge operator with a lifetime of experience made the observation that in his judgment there would be a great change in the handling of freight on barges in the near future. In conjunction with marine engineers, he is formulating a plan whereby many of the objections against the additional handling necessary for lighterage work will be met and overcome by a method which will at the same time materially reduce the expense of handling. All things considered, it would seem that there is a great field in the future for towing and lighterage work on San Francisco Bay.

A 30-Foot Diesel Launch

AFTER many months of experimenting the engineers of Fairbanks-Morse & Company have developed a 7½-horsepower, single cylinder, marine type, crude oil engine, which is adaptable for driving small



The 30-foot launch Walrus, equipped with 7½ horsepower Fairbanks-Morse CO engine on her trials, San Francisco Bay

Announcement

Oil and Gas Power Week

April 20 to 25, 1925

PURPOSE

By means of simultaneous technical meetings, discussions, publicity, etc., to focus nation-wide attention on the part of physicists, chemists, engineers, operating men, and the industries, on recent progress and on immediate possibilities in this basic technical field.

PARTICIPATING ORGANIZATIONS INCLUDE:

AMERICAN CHEMICAL SOCIETY	AMERICAN SOCIETY OF MARINE ENGINEERS
AMERICAN SOCIETY OF MECHANICAL ENGINEERS	AMERICAN INSTITUTE OF CHEMICAL ENGINEERS
AMERICAN PETROLEUM INSTITUTE	U. S. BUREAU OF STANDARDS
AMERICAN SOCIETY OF NAVAL ENGINEERS	U. S. BUREAU OF MINES
NATIONAL ASSOCIATION OF STATIONARY ENGINEERS	THE SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
NATIONAL SAFETY COUNCIL	

Meetings in all leading oil and gas power centers throughout the United States, on subjects of fuels, engine design, operation, economics, trends, research problems, etc.

NATIONAL COMMITTEE IN CHARGE: W. J. Dorrance, Pres., C.S.M.E.; James F. Norris, Pres., A.C.S.; J. Edgar Poe, Pres., A.P.I.; Charles F. Locke, W. Trunks.

W. J. Ballou, 29 West 29 Street, New York, Secretary

boats. It is operated on 24 gravity oil.

The first installation on San Francisco Bay was placed in a new launch built by Geo. W. Kneass, well-known San Francisco boat builder, and christened Walrus. This boat is 32 feet long by 8½ feet beam, and, as will be seen from the illustration, she is of the usual sturdy wooden construction used in the towing launch type so familiar in the waters of San Francisco harbor. Built with good shear forward and with a fantail stern, these boats make very good weather of the choppy harbor waters.

Equipped with a 19½-inch Cloverleaf propeller and with the engine running on the governor at 650 r.p.m., this boat easily makes 8 miles an hour. Running at this speed, the engine consumes 0.6 of a gallon of 24 gravity oil an hour, and the total cost of fuel and lubricating oil is less than 5 cents an hour at full speed.

FLETTNER RUDDER, II

Its Action, Principle and Operation *

**By OLAV OVERGAARD
(Continued from March issue)

FIG 11 indicates the rudder action taking place when changing course rapidly by means of an ordinary rudder. The current strikes the rudder at an angle of 80-90 degrees due to the fact that the ship has not as yet responded, the point of application, therefore, moving to the center of the rudder plane and giving the force a very long arm to act on. The position of the rudder is thus an unfavorable one for producing pressure difference, and the direction of the resultant of the pressure with respect to that of the ship is still more unsatisfactory.

The Flettner fin cannot force the rudder against the current at such a large and inefficient angle. When setting the fin to hard over, the main rudder does not respond immediately, but rests for a moment at O as indicated in Fig. 12.

Strange as it may seem, the Flettner rudder will, in this apparently unfavorable position, impart a much greater steering force to the ship than the ordinary rudder shown in Fig. 11. Numerous practical tests have already proved that sudden changes of course and zigzag steering by a Flettner rudder are executed with a surprising promptness and speed.

Fig. 13 shows diagrammatically the operation of the Flettner fin, (a) indicates the main rudder and (b) the fin. When sheave (c) is turned, say 15 degrees, the motion is transmitted to fin (b), which in its new position creates sufficient pressure difference to force the main rudder (a) through the same angular motion as sheave (c).

While the main rudder plane (a) follows the motion of the fin or sheave (b) it always lags behind a certain amount due to its inertia, and the time factor involved. When the moment of the force exerted by the fin balances the moment of the force on the main rudder, this comes to rest and equilibrium is restored.

Should the rudder be thrown out of its position by a sea, sheave (c) will not change its position with respect to the ship, and the rudder will automatically be forced to return to its adjusted position by the fin, which assumes the position shown by the dotted line.

In Fig. 13 the dotted lines indicate the main rudder thrown out of position. It will be seen that the force exerted by the fin opposes that on the main rudder and as the fin turns faster than the main rudder it fol-

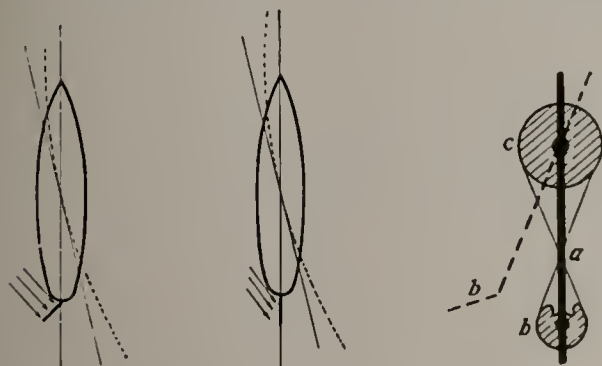


Fig. 11

Fig. 12

Fig. 13

*Reference: Illustrations taken from Werft Reederei Haften.
**Marine Department, Th. Goldschmidt Corp., 13 William street, New York.

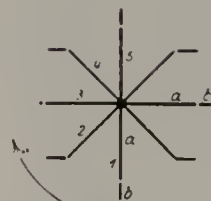


Fig. 15

lows that the latter will be forced back to its original position immediately.

The steering of the ship is as usual controlled from the bridge, and the force required to operate the regulating element is so small that ships of 9000 tons may be steered by hand.

Fig. 14 indicates the scheme of the regulating element. The actuating shaft (steering leads) from the wheel on the bridge is direct-connected to the self-locking worm gear, shown in the upper half of the

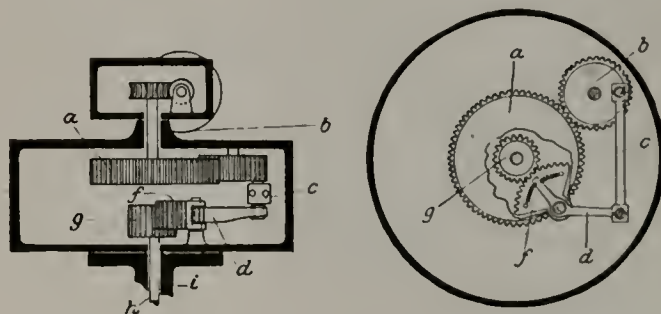


Fig. 14

gear casing. The gear (a), which is the main regulating part, meshes with gear (b) and this in turn operates the bell crank (d) through connecting rod (c), and thereby the toothed segment (f), meshing with gear (g), which is keyed to the driving shaft of the Flettner fin. The lower half of the gear casing is bolted to the main rudder stock and revolves with it.

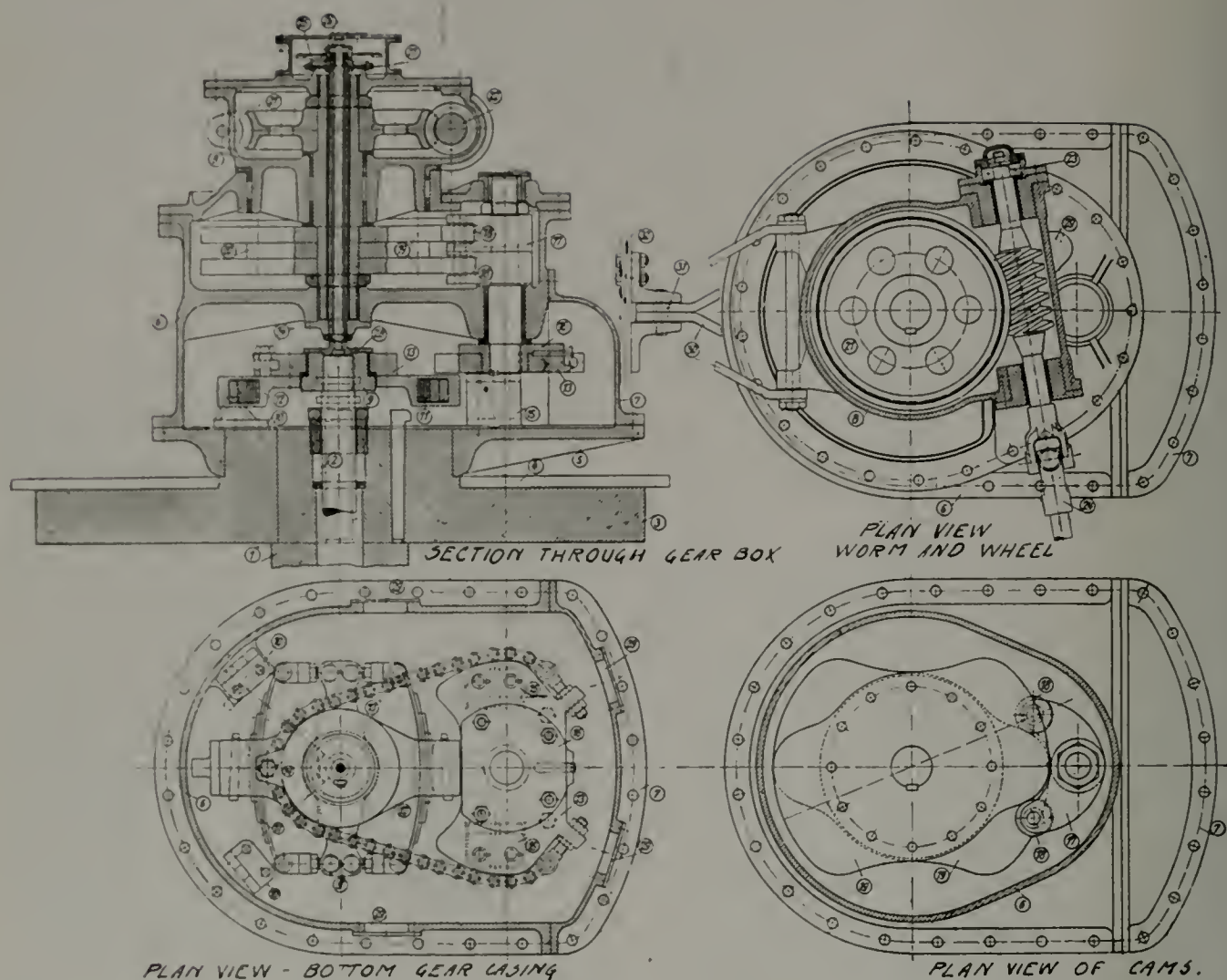
It will be seen that the fin is turned in the same direction as gear (a) and that the motion of segment (f) is damped by means of springs.

The reversing of the rudder from ahead to astern motion, or opposite, is indicated by Fig. 15.

When the engine is reversed, the suction created by the propeller will turn the rudder 180 degrees. While the rudder is moving from position (1) to (2) the fin tries to oppose this motion until it assumes a neutral position (3). In position (4) the fin has adjusted itself in such a manner that it utilizes the forward moving current and aids in turning the rudder to neutral position (5). The helmsman does not need to wait until the rudder has reached the latter position but can adjust the fin to effect any rudder position for astern motion in advance.

At small rudder angles, the motion of the Flettner fin, relative to that of the main rudder, is faster than at large rudder angles. Excessive stresses in the fin as well as in the main rudder are, therefore, avoided.

Instead of overcoming the enormous resistance created by a main rudder (of a considerable area) alone,



- 1 MAIN RUDDER SHAFT
- 2 SHAFT FLETTNER FIN
- 3 RUDDER YOKE
- 4 BRAKE WHEEL
- 5 BOTTOM GEAR CASING
- 6 LOWER CASING
- 7 COVER GEAR CASING
- 8 UPPER GEAR CASING
- 9 SLEEVE SHAFT 2
- 10 STOPPER FOR FLETTNER FIN YOKE
- 11 LEAF SPRING
- 12 LEAF SPRING HOLDER
- 13 SPROCKET WHEEL
- 14 CHAIN HOLDING BOLT

- 15 BEARING
- 16 COUPLING
- 17 ROCKER ARM
- 18 CAM ROLLERS
- 19 CAMS
- 20 FILLER PIECE
- 21 WORM WHEEL
- 22 WORM
- 23 BALL BEARING
- 24 RUDDER LEAD
- 25 MAIN RUDDER POSITION TRANSMITTER
- 26 FLETTNER FIN — — — — —
- 27 ANCHOR STRAP UPPER HOUSING

OPERATING GEAR FLETTNER RUDDER

we are now dealing with a small fin (auxiliary rudder) the area of which is about 1/15 of that of the former and which consequently requires only about 8 per cent of the operating force previously used, or a saving of 92 per cent.

As the angular position of the fin depends upon the direction and velocity of the current, and as the Flettner rudder cannot be forced into an angle at which the rudder moment becomes excessive (i. e. the point of application moves aft towards the center of the planes) we may safely assume an additional saving of 2 to 3 per cent. The total force required to operate the fin therefore only amounts to from 5 to 6 per cent of the force necessary for the operation of an ordinary rudder of corresponding capacity, or a saving of 94 to 95 per cent.

Frequent and large changes of rudder position reduce the speed of a vessel, and we know that poor steering may lengthen a voyage by 25 per cent. The perfectly balanced state of a Flettner rudder in action prevents this, and, by its quick and automatic response to changes in the momentum of the ship practically eliminates yawing.

Steamship Odenwald

Fig. 8 shows the Flettner rudder arrangement on the steamship Odenwald, 9000-ton twin-screw steamer, and incidentally the first ocean-going vessel to be outfitted with this type of rudder (in 1922).

The classification societies required extraordinary precautions when this vessel was outfitted. Two emergency steering gears will, therefore, be seen on the figure, one connected to a deck winch, the other being ordinary hand steering gears.

Fig. 16 shows the operating gear for the Flettner fin. The worm gear is self-locking and the worm is directly connected with the wheel on the bridge through the actuating shaft. Lower casing (6) rotates with the main rudder while the upper casing (8) is stationary. The two cams (19) are identical and are mounted on the same shaft as worm wheel (21). When the worm wheel is turned from the bridge, the angular position of the same as well as that of the rocker arm (17) is changed, the motion being transmitted to the operating shaft of the Flettner fin by means of sprocket wheels (13). Steering astern is identical with ahead, as the lower casing swings around 180 degrees with the main rudder. The rocker arm will therefore be opposite the positions shown on Fig. 16.

The force required to operate the Flettner rudder on the steamship Odenwald is given on Fig. 8 and amounts to about 0.086 horsepower on a hand wheel 32 inches in diameter, the time from hard over to hard over being 15 seconds, or 18 revolutions of the wheel.

A gyro compass, located on the bridge, operates the hand wheel by means of a 1/2-horsepower electric motor, this being all the mechanical power required to actuate the gear and steer the ship.

Results

The results obtained with the Flettner rudder on the steamship Odenwald have been excellent; her maneuvering ability is far superior to that of her sister ship, the Spreewald, outfitted with an ordinary rudder operated by an electric steering engine of about 25 horsepower capacity.

THE YOUNG AMERICA

(Continued from page 161)

much the same fortune. They were all faster sailers than the Egypt.

My theory is subject to faults, as I learned to my sorrow. Still I have faith in it. When I had made enough westing from Cape Horn and was ready to turn north, the wind came out dead ahead and remained exactly dead ahead for a week. I could not make long legs on the port tack because of the proximity to land. On the starboard tack, I made southing instead of northing. I could not escape from the trap. Had I not encountered this unfortunate head wind I think I could have made the passage to Callao in 40 days.

Those other vessels that were further from land and could make long legs on the port tack had a decided advantage over me. Yet I am satisfied that my theory is a good one and regret that I could not make further tests of it, as I intended to do.

The Belle of the West and the Wild Hunter were both extreme clippers, built in East Dennis, Massachusetts, my birthplace, my father being the principal owner. The Belle of the West was sold by Glidden & Williams of Boston in 1864 or 1865 to Mowjio Huny Doss of Calcutta. Her name was changed to Fiery Cross. In May or June, 1868, then owned by Gopaul Gauger, Calcutta, she was reported to have foundered in the Bay of Bengal. The crew were saved by the Earl Russell.

The Belle of the West was the handsomest craft I ever saw and this opinion is also coincided with by many competent authorities. She was also the sharpest; her plank-sheer between decks was a perfectly straight line from stem to abaft the mainmast.

There were built at East Dennis, Massachusetts, between 1849 and 1863, eight ships: Revenue, Hippogriffe, Belle of the West, Wild Hunter, Webfoot, Kit Carson, Christopher Hall (named for my father, then deceased) and Ellen Sears.

Myself and the living sons of David and Asa Shiverick, the former East Dennis shipbuilders, have erected a monument at the old ship-yard which bears a tablet giving the date of launching of the eight ships erected there.

I copied the following from a gravestone in Eastham, Massachusetts:

"Freeman Hatch 1820-1889. He became famous making the astonishing passage in clipper ship Northern Light from San Francisco to Boston in 76 days, 6 hours—an achievement won by no mortal before or since"

Flettner Rudder Comparison of Weights

	Steam steering engine, weights in lbs.	Electric steering engine, weights in lbs.	Flettner rudder, weights in lbs.
Rudder with shaft	26,600	26,600	16,700
Mechanical parts including steering leads.....	22,440	15,660	7,740
Steering engine, including piping, etc.....	20,060	7,000	2,500
Total	69,100	49,260	26,940

SOUNDINGS AT SEA

A Simple, Sturdy Device for Accurate Automatic Soundings Designed and Manufactured by the Submarine Signal Corporation

ONE of the most exacting requirements of the navigator, especially on the Pacific Coast, where currents and fogs make land falls particularly dangerous, is the art of sounding, by means of which he keeps in touch with and at the same time keeps away from the bottom of the sea.

Lead and line served for many centuries and have a very important place in the history of navigation. Very early in history attempts were made at improvements, and some of these early improvements are used to the present day, even among highly civilized mariners. Thus we have the application of soap or grease to the lead for the purpose of obtaining samples of the dirt from the bottom, a device recorded several centuries before the Christian era by Herodotus and also narrated of modern Nantucket fishermen in a famous American poem.

During the last seventy-five years a number of very ingenious scientific devices have been developed for direct readings of sea depths. Thus we have the Kelvin sounding machine, which uses hydrostatic pressure, and the Siemen's gravity differential method, both of which have been used with great success when in the hands of scientists and under ideal conditions. In America, more recently, Professor Fessenden carried on long and numerous experiments for the measurement of depths by means of sound echo, and this method was further developed by numerous experimenters during the recent war in connection with the detection of submarines. Work in this direction was further perfected through experiments carried on by the United States Navy and by the Submarine Signal Corporation.

It will be remembered by readers of *Pacific Marine Review* that the Navy apparatus has been used for torpedo boat destroyers for making a detailed survey of the Pacific Ocean shore inside of the 1000 fathom line. A description and a bathometric chart showing the result of this work were published in *Pacific Marine Review* last year.

The work of the Submarine Signal Corporation has been directed toward the perfection of a commercial automatic sounding machine, fool-proof, and capable of being used at sea under all conditions and in all weathers. Their work has been crowned with success and the resulting machine has been named the "Fathometer." Its accuracy in actual use on board vessels on the Atlantic Coast has been amply demonstrated and, taken together with the work now being carried on by the United States Coast Geodetic Survey, establishing the exact velocity of sound in sea water at various depths,



The recording end of the Fathometer, the new automatic sounding device perfected by the Submarine Signal Corporation.

this instrument will undoubtedly create a new standard of safety in coastal navigation.

The Fathometer is a new sounding machine. It saves time and labor and eliminates the possibility of a personal error. The master of the ship, who is held responsible in case of accident, can take his own sounding simply by pushing a button and it will no longer be necessary for him to depend on some member of the crew for an accurate sounding. It is a safety device not only for the ship, but also for the men who formerly took soundings. It is no longer necessary to chase aft in heavy weather, on wet and slippery decks, to take soundings. The Fathometer can be placed in the chart room and the officer can know to the minute, without even going on deck, just when he reaches the 100 fathom or the 50 fathom curve.

The following is a brief description of the work done by the Research Laboratory of the

Submarine Signal Corporation in developing the Fathometer:

The problems which confronted the experimenters who first endeavored to make accurate measurements of the time elapsing between the production of a sound under water and the return of an echo from the bottom were somewhat similar to those which presented themselves in the earlier days of wireless communication, with the additional difficulty that it was necessary to work within very small time limits. If the sound had a duration of a tenth of a second, the initial waves of the disturbance had time enough to reach a depth of forty fathoms and return before the initial sound ceased, and the echo blended in with the original so that it was impossible to make any measurements. Whatever was used to produce the sound waves, it was imperative that the disturbance be over in less than one-hundredth of a second if any accuracy was to be obtained. Explosions of impact sound producers, which depended on a single sharp blow on a diaphragm, answered this requirement successfully, but produced difficulties at the receiving end. The case was analogous to the difficulties with wireless spark stations which produce a series of electrical impacts, because in both cases it is useless to employ sharply tuned or selective receivers. The solution followed very much the same lines as in the wireless field. A sound producer was developed which gave a short musical note, or continuous wave, and could be excited during a very small interval of time. This made it possible to utilize a tuned circuit for receiving the echo and decrease the effect of water noises and other sounds which might blur the real echo.

The sound producer used in the present depth sounding apparatus is known as an oscillator. It consists of a steel plate firmly clamped on the edges and having properly chosen dimensions so that it vibrates naturally with a frequency of 1050 cycles a second, giving a short, clearly distinguished musical tone under water. The plate or diaphragm is actuated by a powerful electromagnet energized by an alternating current, so that a pulsating pull results one thousand and fifty times a second. The instant that the current ceases to flow, the pressure of the water on the diaphragm acts like a brake, so that the signal ends sharply and does not tail over and merge with the returning echo.

The echo itself is detected by means of a hydrophone, which consists of an ordinary microphone, similar to those used in telephone transmitters for changing sound waves to electric waves, enclosed in a watertight case and connected to a diaphragm in contact with the water. The diaphragm takes part in any underwater vibrations and transmits them to the microphone button where they produce variations in an electric current which are faithful reproductions of the underwater disturbances. When it is necessary to increase the feeble energy of the echo or weed out extraneous noises, a vacuum tube amplifier with tuned circuits is utilized.

The current from the hydrophone goes to a Fathometer where the time required for the echo to reach the bottom and return is accurately measured and the depth is automatically indicated on a graduated dial.

The indicator mechanism is sturdy and fool-proof. It will operate in any position and contains no delicate adjustments which can be put out of order by the rolling of the ship, or even by severe shocks, but it is extremely accurate and gives readings that can be relied upon within a fathom. In operation a luminous finger points to the spot on the scale corresponding to the depth, jumping about when the bottom is rough and rocky, varying slightly when the ocean floor is shelving, and remaining fixed when the depth is constant. The light itself is not continuous, but flashes four times a second, giving the illusion of a nearly constant light by the phenomenon of optical persistence of vision, of which the moving pictures are an example.

A glow discharge tube is mounted behind a slit on a disc, which makes four rotations a second. In front of the disc is a circular glass plate graduated in fathoms from 0 to 100, corresponding to the depth from which an echo could return during the time of one rotation, or a quarter of a second. On the shaft, which rotates the disc and the light, is a cam which closes the circuit of the sound producer, or oscillator, and sends a current through the lamp when the latter is opposite the zero on the scale. When the returning echo causes a pulse in the hydrophone current a relay sends a luminous discharge through the rotating lamp and indicates the point on the scale corresponding to the depth.

For depths greater than 100 fathoms the speed of the rotating light is changed and the cam which closes the circuit of the oscillator operates once every second and a half. A light of different color and a different scale are used so that there can be no confusion, a single gear control affecting all the changes simultaneously. In order to differentiate between the two scales and extend the readings to depths from which the signals are too weak to operate a relay with cer-

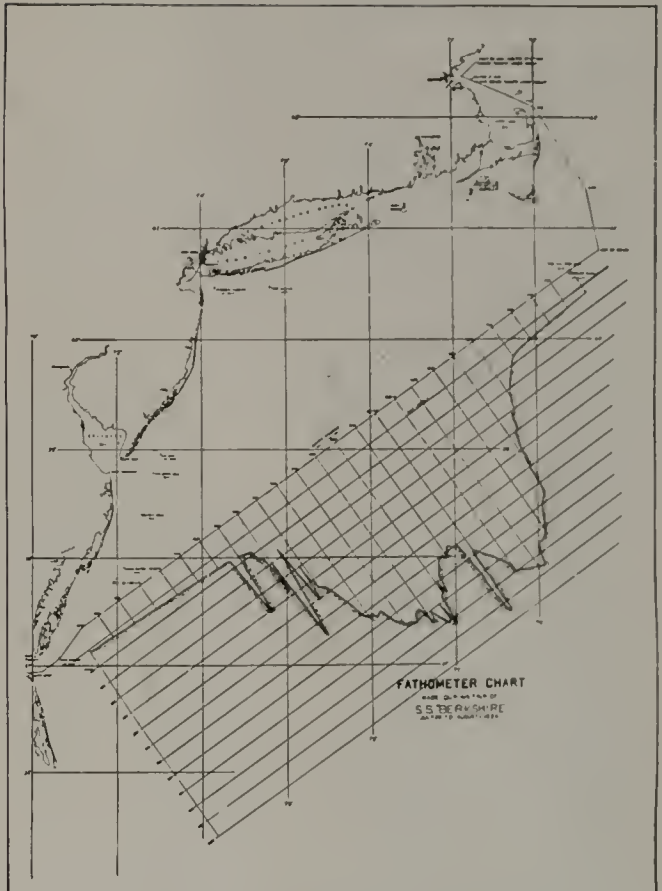


Chart Showing Water Depth as Recorded by the Fathometer

tainty, the echoes are sent through a telephone and the revolving light is made continuously luminous. The position occupied by the light when the echo is heard corresponds to the depth, which can be read directly on a scale graduated from 0 to 600 fathoms. If the depth is greater than 600 fathoms the light makes more than one revolution and the depth can still be accurately determined by adding 600, 1200, etc., fathoms to the reading according to the number of complete revolutions of the light between the instant when the sound source is actuated and the instant when the echo is heard.

In a series of tests made under service conditions the apparatus described above has proved trustworthy and accurate. Its operation is entirely automatic, for it starts by pushing a button and indicates depths without adjustment or attention as long as it is allowed to operate. Soundings by this method are nearly instantaneous.

It is felt that this system of finding ocean depths offers one of the greatest aids ever made in insuring the safety and speed of navigation. By the aid of this system of the Submarine Signal Corporation the navigating officer is enabled to obtain a visual indication when his ship comes on "soundings," i. e., depths which in the past could be obtained by the use of a "lead," and when on soundings he is enabled to obtain his position by noting the changing depths as shown by the Fathometer and comparing such indicated depths with those recorded on the chart.

The Submarine Signal Corporation maintains a service office at 32 Howard Street, San Francisco, and at other Pacific Coast ports. Mr. P. A. Richards is representative for the San Francisco territory.

ISHERWOOD SYSTEM OF SHIP CONSTRUCTION

WHILST the year 1924 was one of depression in regard to the shipbuilding industry and it has been generally conceded that only a small number of contracts were placed, an increased amount of new tonnage was added to the remarkable records of the Isherwood system, which, since its introduction, has always kept pace with the times, as is shown by the following table giving the total number and deadweight tonnage of Isherwood ships for each year up to date:

Year	No. of Ships Built or Under Construction	Deadweight Carrying Capacity
Sept. 1907 to		
Dec. 1908	6	31,608 tons
1909	36	212,992 tons
1910	76	484,752 tons
1911	140	958,795 tons
1912	240	1,777,348 tons
1913	270	1,993,034 tons
1914	311	2,351,322 tons
1915	468	3,548,221 tons
1916	620	4,666,000 tons
1917	800	6,332,150 tons
1918	1,050	8,707,700 tons
1919	1,260	10,594,700 tons
1920	1,395	11,962,400 tons
1921	1,418	12,032,400 tons
1922	1,431	12,101,890 tons
1923	1,443	12,174,490 tons
1924	1,472	12,408,700 tons

Among the more important of last year's contracts were nine large oil tankers for the Standard Oil Company (N. J.), seven of which are of 12,000 tons and two of 15,000 tons deadweight carrying capacity, in addition to a special type of lubricating tanker for the same company. All these vessels are being fitted with diesel engines, and in such cases the increased rigidity of the hull structure obtained by the adoption of the Isherwood system is a valuable consideration.

There is also an interesting contract by the Southern Pacific Company of New York for a vessel 415 feet 0 inches by 56 feet 0 inches by 37 feet 0 inches for their passenger and freight trade. This vessel, which is building by the Federal Shipbuilding Company of Kearny, New Jersey, is following upon an order placed last year by the same company for a similar type of vessel.

Two other very interesting contracts were the vessels Cabimas and Paraguana, built by Palmers Shipbuilding & Iron Co., Ltd., at their Jarrow Yard to the design and under the supervision of Sir Joseph W. Isherwood, Bt., on behalf of the Gulf Refining Company of Pittsburgh, Pennsylvania. Both of these vessels are employed in transporting oil from Maracaibo Lake to the Caribbean Sea, where they will discharge their cargo into ocean-going ships. This service requires a special design of construction embodying maximum strength with minimum draft, and the Isherwood system is undoubtedly more adaptable than any other method of construction for this type of vessel.

The more recent of Isherwood contracts include two large tankers for the carriage of oil and molasses in

bulk. They are being built by the Furness Shipbuilding Co., Ltd., Haverton Hill-on-Tees. These vessels are of dimensions 470 feet 0 inches by 62 feet 3 inches by 35 feet 4 inches and 12,500 tons deadweight carrying capacity.

The latest additions to the fleet of Isherwood vessels are a lubricating tanker with a two longitudinal bulkhead arrangement to carry about 7250 tons deadweight, placed by the Vacuum Oil Company of New York with the Greenock Dockyard Co., Ltd.; a 7000 ton tanker to be built for the French Admiralty by Worms & Co. of Le Trait; and a special type of motor cargo liner of about 8000 tons deadweight to be constructed by Archibald McMillan & Sons, Ltd., of Dumbarton.

The following analysis of the table of ships above referred to is evidence of the suitability of the Isherwood system for all types of vessels:

General cargo vessels, colliers, ore steamers, passenger vessels, Great Lakes freighters and passenger and ferry vessels, 651, aggregating 5,820,880 tons deadweight carrying capacity;

Oil tankers, 684, aggregating 6,512,450 tons deadweight carrying capacity;

Barges, dredgers and trawlers, 137, aggregating 75,370 tons deadweight carrying capacity.

NEW DIRECT DIESEL DRIVE FERRY

THE Brockville & Morristown Transportation Company, Inc., of Morristown, New York, operates a ferry service between Brockville, Canada, and Morristown. As this service carries a heavy tourist traffic during the summer months, the Brockville & Morristown Company are adding a new steel ferry to their equipment for the coming season.

Eads Johnson, the prominent naval architect, 115 Broadway, New York City, has designed a double ended steel ferryboat, 100 feet over-all, 40 feet beam, and 5 feet 6 inches draft, to accommodate 25 cars as well as some 250 passengers. Mr. Johnson has had considerable experience in the design of ferryboats of this class and has developed a very serviceable and practical vessel. The hull is to be constructed at the T. A. Kyle shipyard, City Island, New York, and it is expected that the complete vessel will be ready for service toward the end of June.

The propelling machinery consists of one 180 H. P. Nelseco direct reversible marine diesel engine, manufactured by the New London Ship & Engine Company of Groton, Connecticut. The engine will drive both the forward and aft propellers simultaneously, and reversing will be accomplished by reversing the rotation of the engine. Due to this simplified system of drive, the Brockville & Morristown Company will obtain the maximum in economy and simplicity, as well as retaining good propeller efficiency.

After completion of vessel in New York, she will be run via the Hudson River and New York State Barge Canal to the St. Lawrence River and immediately engage in the regular 24-hour service. With this modern equipment the Brockville & Morristown Company will be in a position to handle increased tourists traffic without delay.

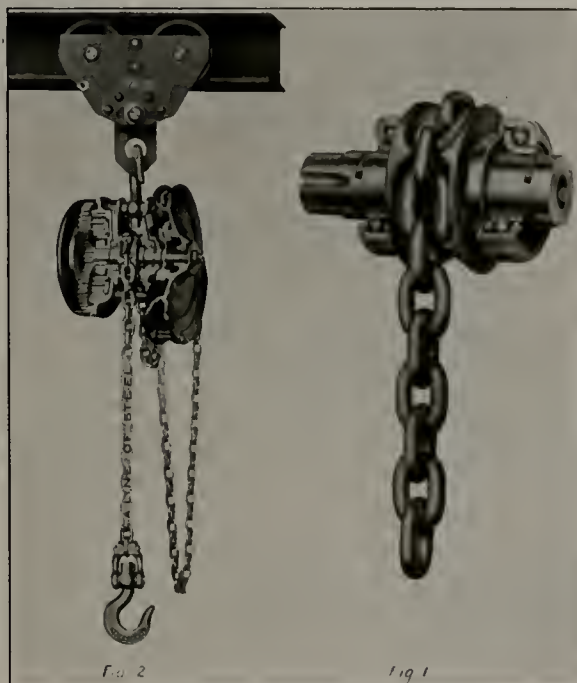
AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

A NEW BALL-BEARING SPUR-GEARED YALE & TOWNE CHAIN BLOCK

HOISTING is dangerous work. Hand hoists are frequently used by inexperienced or careless workmen, and serious accidents are likely to happen unless the very best materials and workmanship are used in the construction of these hoists, and a liberal factor of safety employed in their capacity rating.

Chain blocks are perhaps the most universally used form of hand-hoisting machinery. This is largely because of their high mechanical efficiency, load sustaining brake, and the fact that they are not easily injured by weather, heat, or chemical fumes. The best chain block is the one which will lift the quickest and the easiest, while at the same time possessing the safety features necessary for machinery or tools which are likely to get into the hands of inexperienced or careless workmen. A chain block is often used in an emergency; that is, when something has broken down or when some piece of machinery or load must be put in place on short notice. When chain blocks are used in this way, they are often called upon to stand uncertain overloads and not infrequently surge loads which occur when the load slips in the sling chain, swings off a platform or in line with its center of gravity. This is a rather common experience with liveloads. The breaking of a single link of load chain under these conditions would be disastrous. These surge loads often put a momentary overload on a chain block amounting to a great deal more than its rated capacity.

The latest development in chain blocks consists of the introduction of large size ball bearings to support the load sheave as shown in Fig. 1. This block is just being put on the market and interesting claims are made for its high mechanical



New Yale & Towne chain block

efficiency, which results principally from the use of chrome vanadium steel ball bearings of large size.

Fig. 2 shows a sectional view of the block and the location of the massive steel load sheave carried on two ball bearings, each containing vanadium steel balls. The top hook, crosshead, suspension plates, load sheave, electric-welded load chain, detachable shackle, bottom crosshead and hook are all steel, so that the load hangs on a line of steel from hook to hook. The mechanical efficiency of this block has been increased over 6 per cent by the introduction of these ball bearings where they carry the full load.

In order to obviate the danger so common in hoisting, a great deal of attention has been given not only to the size of the parts in the make-up of this chain block, but to the material entering into these parts. Obviously it is bad practice to put castings in any part of a chain block where they come in tension. The best possible practice is to use wrought steel parts wherever these parts come in tension in sustaining the load.

The best possible pitch chain

should be used for supporting the load. Not only should this chain possess a great elastic limit and tensile strength, but it should be as accurate as well-cut gear teeth. A stretched link soon begins to deform the pockets of the load sheaves in which it rides, and a poorly-shaped load sheave pocket will quickly begin to deform every link of chain which rides in it.

The ball or roller bearings in a chain block must be able to stand up under the shock or pile driver blow which occurs when the load "drops" or takes up the slack in the load chain. These bearings must be sufficiently liberal in size, and superior in material to take this hammer blow without showing any ill effects.

LUNKENHEIMER EXHIBITS

IN booth No. 104 at the Informa-show, to be held in Milwaukee Auditorium, Milwaukee, Wisconsin, May 25 to 28, 1925, purchasing agents will find an interesting display of valves of bronze, iron and steel; pop safety, blow-off and non-return valves; water columns, water gauges and gauge cocks; lubricators; oil pumps, hand and mechanically operated; oil and grease cups; whistles, cocks, etc.

"Keeping pace with modern engineering practice" will be truly exemplified in the complete exhibit of Lunkenheimer products, and competent attendants will be pleased to explain in detail the distinctive features of the various articles on display.

Of particular interest will be the new designs of Lunkenheimer super-pressure steel gate valves—made in all sizes, for 250, 400, 600 and 900 pounds working steam pressure, 750 degrees F. temperature, conforming to the proposed American steel flange standards developing under A. E. S. C. procedure.

Visiting purchasing agents will be cordially welcomed at booth No. 104, and are invited to submit their valve problems to the men in charge of the exhibit, who will render all possible assistance in solving them.

MERCURIZED WOOD

WE have recently been shown some blocks of wood which, after impregnation with a new preservative, were exposed to the attack of teredo worms and other marine borers at the Key System wharf, Oakland, California, for seventeen and a half months. The wood is in a state of the most perfect preservation, and no sign of marine borers is apparent. One of the blocks was sawed through the middle, and from appearances it would seem that quite apart from marine borers this new preservative is likely to preserve wood more efficiently than any means so far used.

The preservative consists of petroleum derivatives and mercury (the latter in a form in which it freely dissolves in oil). Medicine has used mercury for many years for the destruction of the lower forms of animal life, and it has been found that even when greatly diluted, say one part in ten thousand, it destroys all microbes. Experiments have been made by the National Piling Committee with mercury in the same watery solution in which it is used by the medical profession, but, while it was found highly efficient for a time, the seawater gradually leached out the mercury, whereupon the piles were unprotected.

The new method under notice, which has been brought out by the International Compositions Company of New York, combines the mercury with fuel oil, which later acts also as a preservative by waterproofing the wood and preventing cracks. We understand this new combination is not more expensive—in fact, even less so—than creosote oil, which is now used for the purpose of preserving piling and railroad ties. It has, however, the following advantages over creosote oil:

1. It waterproofs and preserves the wood;
2. It does not weaken the wood during impregnation or make it brittle;
3. It has not the unpleasant odor and appearance of creosoted wood;
4. Wood so impregnated may be varnished or painted, which cannot be done over creosoted wood.

Wood thus treated becomes also available for structural purposes in the tropics, where the white ant works destruction. It may be used also in shipbuilding, for it goes without saying that wood proof against



Cross section of block of mercurized wood after over 17 months submersion at the Key Route pier, Oakland, California

the teredo worm will be welcomed for the building of fishing vessels, barges, and other craft trading in tropical waters.

This proposal to impregnate the timber used in ship and boat building has an interesting feature that is very important to wooden ships, for it will be manifest that if the outer planking of ships is impregnated with fuel oil and made water proof there will be no danger of that planking becoming water-logged and thereby decreasing the carrying capacity of the vessel.

The new method should be of great interest on the Pacific Coast, where the teredo worm and other marine borers have worked damage amounting to millions of dollars, as fuel oil is a local product, while creosote oil has to be brought in from the East.

The International Compositions Company is represented in San Francisco and San Pedro by C. D. Clinch & Company, and we understand trials of greater importance are already under way on the coasts of the United States, in Panama, Manila and other ports.

TRADE LITERATURE

Monitor Controller Company, 500 East Lombard street, Baltimore, Maryland, has recently issued Bulletin 107 describing Monitor Edge-wood Resistors. These resistors are made of ribbon of zero temperature

coefficient of resistivity and each convolution is individually supported at two points. On basis of air temperature permitted by the Underwriters, these units will dissipate 60 watts per inch of length.

The Black & Decker Mfg. Co., Towson, Maryland, has issued Catalog No. 8, on Portable Electric Tools and Shop Equipment. This is an unusually good looking booklet and includes illustrations and descriptions of their portable electric drills, grinders, valve grinders, tappers, screw drivers, socket wrenches, post and bench drill stands, electric band and pedestal grinders.

Chase Metal Works' advertisements are always interesting and artistic. A recent colored tip-in sheet sent out as supplement to "The Chase Diamond" features vividly in three colors the idea that condenser tubes manufactured by the Chase Metal Works are used in common by the steamship Leviathan and by the Devon Power Plant, the largest American steamship and one of the largest American steam central stations. Copy of "Chase Condenser Tubes," describing how the condenser tubes are made, may be obtained by writing to the plant at Waterbury, Connecticut.

ELECTRIC OVENS ON FLOATING FOUNDRY

THE United States steamship *Medusa*, the first naval vessel to be designed and built as a repair ship, is using electric heat for drying moulds and baking cores.

This ship, which has a displacement of 10,000 tons, contains equipment for turning out castings for almost any repair job aboard our warships, with the exception of the large main propelling engine castings.

Besides the foundry, the following shops are included: pipe shop, plating shop, sheet metal shop, optical shop, gyroscope repair shop, paint shop, blacksmith shop, boiler shop, machine shop, sail makers shop, and pattern shop.

The melting equipment consists of a 3½ and a 1-ton cupola, and four 700-pound brass crucible furnaces.

In an installation of this sort, where only a limited amount of raw materials can be carried, it is essential that the casting be as nearly perfect as possible. The job must



Westinghouse electric core baking oven of the type used on board the United States repair ship *Medusa*.

be done right the first time. In order that rejections due to imperfectly baked cores be eliminated, an electric oven has been installed for this process. This oven, built by the Westinghouse Electric & Manufacturing Company, is 7 feet by 7 feet 10 inches by 7 feet 6 inches high. Double doors are provided. A truck on rails is used for handling large cores, and shelves in the

upper part of the oven take care of the smaller cores. On each side of the oven are mounted five 2.5 kilowatt Westinghouse type C oven heaters. A blower driven by a one-sixth horsepower motor is mounted on the top of the oven for exhausting fumes and gases from the oven.

The oven is equipped with graphic recording automatic temperature control apparatus.

The mould drying oven is similar to the core bake oven, the only difference being that the stationary shelves are omitted. The handling truck completely fills this oven.

The use of electric heat for marine application is growing rapidly, due to its convenience, safety, controllability, and the fact that fuel storage-space is saved. In addition, aboard the *Medusa* the use of electric heat for baking cores and drying moulds decreases the number of rejected castings, a point of paramount importance.

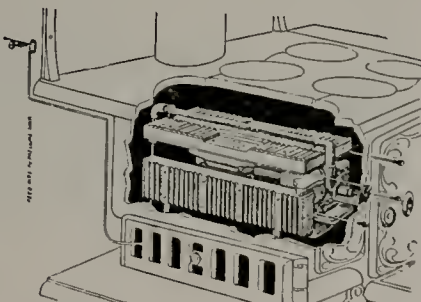
"NU-WAY" COOKING

WHEREVER workboats or pleasure craft go on extended cruises a galley is necessary, and the question of galley range immediately becomes a problem. The principal item in this problem is the method of firing the range.

A Seattle inventor has come to the rescue of workboat and pleasure craft owners with a device which he has named the NuWay burner. This burner is designed to fit in any ordinary stove or ship range for either heating or cooking purposes. It burns kerosene, and it will be seen by reference to the diagrammatic sketch herewith that the NuWay burner, as used in the stove, is designed to emphasize heat directly where it is needed.

A pilot light, burning constantly, keeps the whole apparatus warm. Four control rods give intense heat almost immediately at any point desired.

Referring to the sketch, the four small handles operating the sliding valves direct the flame in the following manner: When all handles are pushed in the flame burns only as a pilot light, or a simmerer, at the center of the top burner. By pulling out either one or both of the top handles the flame is immediately in-



Diagrammatic sketch showing method of installing the NuWay burner in a cooking stove.

tense under one or both of the front lids. Pulling out the right hand bottom handle directs an intense flame against the side of the oven. Pulling out the left bottom handle throws an intense flame against the water coils on that side. The hand wheel in the center regulates the size of the blue flame from very little to very high.

A number of these NuWay burners have for several years been used in the galleys of Pacific Coast yachts, notably in Stewart Edward White's yacht *Dawn*, and the burners have given excellent satisfaction, being very easy to handle and eliminating the dirt and nuisance of coal and ashes. The burner is very simple, is made of heavy grey cast

iron, and will outlast any ordinary stove. It is manufactured by the NuWay Burner Manufacturing Co., 1019 Western avenue, Seattle, Washington.

TRADE LITERATURE

The Federal Telegraph Company, Hobart Building, San Francisco, with branch sales offices in New York and Tokyo, has recently published a very interesting and well made-up booklet entitled "Conquest of the Fog."

This booklet relates in very interesting manner the development of Kolster Radio Compass and the great service it is rendering to safety of navigation at sea. The operation of the Kolster radio compass is fully described and the booklet is attractively illustrated with photographs of installations.

Another section of the booklet is devoted to the United States Lighthouse Service and its work and efforts to establish radio beacon stations on all the coasts of the United States and its territories.

We are sure our readers will find this book most interesting and instructive. Copies may be obtained on application to any office of the Federal Telegraph Company.

CABLE LAYING LIGHTER

(Continued from page 167)

At the beginning of each operation the joint is flooded with melted paraffine. The heat of the paraffine evaporates any dampness that might be present. Cleanliness and the absence of moisture are absolutely essential to the success of the splice.

When all of the wires are connected to their mates and the final flushing with paraffine finished, the bunch of wires is wrapped with cotton tape and the tube slipped back, covering the ends of the lead armor. The ends of the lead tube are then peened down to fit the lead armor, the lead sleeves to protect the cable from heat put on and the joint wiped at each end of the tube.

Covering the Splice

The joint is then covered in the following order:

1. Rubber tape is wrapped on to form a cushion to take the shock of pounding should the cable surge back and forth on the bottom.
2. Electrician's tape is wrapped on to hold the rubber tape in place.
3. The cord fabric is wound back over the joint.
4. Cotton tape is then wrapped outside of the other covering.
5. The wire armor is then wound back on the cable for 18 feet and the first 2 feet are wound as tightly as possible.
6. The spinner then serves the outside of the armor with wire and the armor winding is tightened ahead of the spinner as it goes along.
7. At intervals the wire is wiped with solder to hold it firm.
8. Burlap is served outside of the wire put on by the spinner.
9. Marlin is served outside of the burlap.
10. The marlin is painted with Stockholm tar.

The cable lighter is then placed in position again and the complete spool wound on the reel. These operations are repeated until the reel is full of cable.

Laying the Cable

On the day set for the laying of the cable the cable lighter was brought to the Ferry Building, San Francisco, and the end passed ashore to the cable house. Telephones were installed so that the cable lighter was at all times in communication with the shore. At high tide the diesel tug Roland of the Oakland Launch & Tugboat Company fleet started off with the cable lighter in tow.

A strain was kept on the cable by

means of the brake on the reel, a steady stream of water keeping the brake cool. Soundings of the bay are taken from the chart and the approximate location of the end of the cable is known at the start. While crossing the bay a steamer going to sea evidently did not realize that the cable laying operation was going on and crossed the path of the cable lighter ahead of the diesel tug, causing quite a thrill to the officials in charge.

It is very difficult to stop the operation once it is started and if it is stopped the cable lighter drifts off the course, thereby running the risk of putting a kink in the cable and also requiring more cable to reach the point of destination. When the end is reached a final test is made for leaks and a wire is bent onto the cable either attached to a buoy or, as in this case, attached to some land mark like the sounding board for locating the course to the

Parr Terminal Wharf, Oakland.

The cable lighter then goes to the wharf for another load of cable and returns to the end of the cable that has been laid. The end is lifted from the bay and spliced on to the part that is on the reel. The cable is then rolled on the reel for 800 feet or so until the cable lighter is back on the course laid down on the chart. The laying then proceeds to the Oakland shore.

When the shore is reached measurement is taken of the amount of cable required to finish the line to the cable house. The cable is then coiled in figure eights on deck and when the proper amount is ready the end is sealed and hauled ashore. Not a single hitch occurred in the whole operation from first to last.

It is planned to finish the cable lighter and equip it with electric lights and all accommodations in first class manner just as soon as the present cable work is finished.



Climax Engineering Company

THE Climax Engineering Company has, for a number of years, been engaged in the manufacture of Climax internal combustion engines and Climax self-contained refrigerating units. The main office and factory are at Clinton, Iowa. The company is capitalized at two and a half million dollars and has made a very fine reputation for producing reliable equipment for small power plants and for refrigeration installations.

Some three years ago the Climax Engineering Company opened negotiations to build a branch factory at Los Angeles. The plant shown in the accompanying illustration, located at Hollywood, was finished about a year and a half ago for the specific purpose of producing high class refrigeration equipment.

The equipment of the building in-

cludes various types of pipe bending machinery, an acetylene generator with gas piping throughout the building, and welding equipment of the very latest type. The machine shop is equipped with the latest machinery needed for refrigerative work, and with a complete air compressor plant for riveting and for various cleaning and sanding operations.

Henry B. Grandin is manager of the Los Angeles branch, and he has built up an organization which includes in the personnel a high grade refrigeration engineer and a high grade gas engine engineer; so that the Climax Engineering Company is prepared to furnish expert advice on gas engines or refrigerative work, as well as to manufacture standard or special types of these kinds of machinery.

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

MORE than one nice point of marine insurance is involved in the complete coverage of a passenger or freight liner both while under construction and when in operation. Vessels of this character now building cost from \$1,500,000 to \$6,500,000. In such cases there is exhibited the very important part played by insurance in safeguarding great interests.

That part of the cost of building such vessels which is loaned by the United States Shipping Board must under the Jones Act be kept insured at the expense of the owner in the American Marine Insurance Syndicates. The Syndicates cover the government's interest in Syndicate "B", whereas the owner's interest is taken care of by Syndicate "C". It is probable that only a part of the owner's interest will be covered in the Syndicates, the balance going abroad.

The cost of insurance in the operation of a vessel is a very important item in an owner's overhead. He must provide against marine losses, including fire, damage to his vessel from internal explosions and other mishaps aboard ship, damage done to other vessels by collision through the fault of his master or crew, damage done to property of others resulting from accidents such as colliding with piers or other harbor structures, and injuries to passengers as well as to members of the crew.

Full Form Hull

The so-called full form of hull policy extends protection for injuries received by the insured vessel from sea perils, fire, and internal explosions. This policy also covers the ship's liability for damage to other vessels and to the cargo on board of other vessels. If the owner has used due diligence to make his own vessel seaworthy he is relieved by the Harter Act from responsibility for damage sustained by cargo on his ship caused by the negligence of the mas-

ter or crew in the operation or management of the vessel. The full form policy contains a clause permitting the owner to insure up to 40 per cent of the full form insured value of the vessel on disbursements, anticipated freight, and similar interests.

Disbursement Clause

The actual result of what is termed the disbursements clause is a lowering in the cost of insurance to the vessel owner as, instead of placing full form insurance on the total value of his vessel, he covers the disbursement interest against total loss, constructive total loss and excess general average or salvage charges only.

Thus a vessel which is to be operated in a good service, from an underwriting standpoint, such as San Francisco to Honolulu, for example, would insure under a full form policy at an annual rate of about 2½ per cent. If the owner were compelled to insure the total value under a full form policy the annual insurance premium would amount to \$25,000 per \$1,000,000 valuation, but with the disbursement clause permitting him to insure 40 per cent of the full form policy value against total loss, etc., only, he can place \$400,000 on disbursements at an annual rate of approximately 1 per cent, or a saving of 1½ per cent annually on \$400,000, which amounts to about \$6000 saving in premium on each \$1,000,000. The full form underwriter pays for all partial losses covered by his policy up to the face value of the full form policy, \$600,000 in each million. The owners are, in most instances, justified in their assumption that any partial loss which is serious enough to exceed the full form policy cover will result in a constructive total loss and therefore the loss in excess of the full form will be recoverable from the disbursements underwriter.

Protection and Indemnity

Insurance against damage to harbor structures, buoys, or liability incurred in being compelled to remove sunken obstructions from the channels of harbors is covered under what is known as Protection and Indemnity Insurance. This insurance may be placed with underwriters or it may be taken care of by steamship owners' mutual associations. These associations, formed by owners to afford mutual protection against losses which are not covered under the ordinary marine insurance policies, assess the members for losses on the basis of the gross tonnage of the vessels entered in the association. The Protection and Indemnity policies issued by underwriters usually exclude damage due to loss of life or personal injury, whereas the mutual associations extend protection for such reverses.

Builders' Risk

In addition to the insurance which must be carried by the owners there is an important item of protection which arises prior to the owner accepting delivery of the vessel; this is known as "builders' risk" insurance. As the name signifies, this latter type of insurance is carried by the builders while the vessel is under construction. Ordinarily the policy on builders' risks attaches from the commencement of the laying of the keel and continues until the completion of the vessel, including launching and trial trips. The rate for "builders' risks" on a good class of steel vessel averages from 33½ cents to 35 cents per hundred dollars for a year on the total value of the completed vessel. Sometimes, by special arrangement, insurance is placed under builders' risks policies on the materials while being assembled in the builders' plant and on the plans and patterns prior to the laying of the keel. In such cases a flat amount is agreed upon as representing the value of the plans and

North British and Mercantile Insurance Company, Ltd.
The Commonwealth Insurance Company, of New York

PARROTT & CO., Pacific Coast Marine Agents

320 California Street

E. L. BARRY, Manager

SAN FRANCISCO

FIREMAN'S FUND

Insures Hulls, Cargoes,

HEAD OFFICE: CALIFORNIA AND SANSOME

JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON

E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

materials and a low rate charged as the liability of the underwriter is limited to practically a fire risk. A graduated coverage from the time of the laying of the keel to the completion of the vessel may also be specially arranged, the rate being proportionately higher on the smaller amounts than when premium is paid on the full value during the period of construction.

Underwriters on builders' policies are liable for damage to the hull and machinery due to the settling of stocks, breakage of shores or hoisting gear, etc., but, as a rule, there is an exclusion of damage caused by earthquakes.

From this it will be seen that the proper and complete coverage of the owner and the builder is an important and intricate part of the building and operation of a vessel.

"Admitted" and "Non-Admitted" Companies

Before a shipowner or shipper commits his insurance protection to a foreign insurer he would do well to acquaint himself with the standing of such an institution in the courts of this country, as otherwise he is certain to become involved in elaborate and expensive proceedings in the event of difficulty or debate over the collection of a claim. In this connection it may be to his advantage to consider the following points. Many insurance companies organized and chartered in foreign countries are "admitted" to do business in the United States by seeking admission to one of the various states, there being no Federal regulation of insurance here, excepting in the District of Columbia. The state to which the application has been made ordinarily requires that cash or approved securities in a given amount be deposited with a designated official of that state or with some other state of the United States. The amount varies accord-

ing to the particular kinds of business the company proposes to write. The foreign company must submit an annual statement, meet the solvency standards required of domestic carriers, and otherwise comply with all the laws and regulations applicable to domestic underwriting institutions. The purpose in this is to place around the American policyholder of such foreign companies the same safeguards as apply to companies incorporated under American laws. The foreign company which has met these requirements is known as an "admitted" or "authorized" foreign company. The "non-admitted" foreign company is one that has done none of these things.

The state insurance departments exercise no jurisdiction over non-admitted companies, and the policyholders of the latter have no recourse to the courts of this country, there being no representatives in the United States for the receipt of notices of suit or other legal proceedings. Such policyholders are, therefore, obliged to bring action, when such is necessary, in the courts of the country in which the company is domiciled. It might be that personal attendance would be required at the trial of an action, thus entailing the necessity of a trip abroad; and, in any event, counsel would have to be employed abroad and all the formalities of a foreign court complied with. If the policy were issued by a non-admitted association of underwriters the policyholder would be compelled to bring suit separately against each individual underwriter on the risk, there being no corporate liability. The laws of America do not apply. Policies of this kind are usually made at the home office or a branch of the insuring company abroad and delivered by mail or "unauthorized" representatives to policyholders here. In such cases the laws of the coun-

try in which the home office or the branch office is located govern the contract.

Is it worth while to face such a situation when there are sound insuring companies here at home whose security, supervision, service and protection are thoroughly safeguarded by American laws?

Hull Insurance in Bad Way

The deplorable condition of the hull insurance business is being universally commented upon by underwriters in both the United States and abroad. Every annual meeting of companies writing this class produces its depressing atmosphere of pessimism. Many conservative underwriters are declining to write hulls at the prevailing rates and under the broad conditions that are being granted, feeling that they inevitably invite financial disaster by so doing. From England come outspoken denunciations of the present situation. Chairman H. T. Hines of the Institute of London Underwriters, at the recent annual meeting of that body, spoke strongly with respect to the difficulty of protecting the basic and fundamental principles and safeguards of marine insurance in the face of modern competition. He declared that even shipowners themselves agree that the present rates are below cost, and he cited one prominent owner as having declined to be a party to an agreement that is "economically unsound."

F. L. L. Fish, chairman of Lloyd's Underwriters Association, has gone on record with the opinion that the hull underwriting situation has become such that it must inevitably leave a loss to those engaged in it to any extent. He also took a strong position respecting the granting of policy proof of interest insurance on mortgaged steamers of certain nationalities of the south of Europe. He denied the existence, in such in-

INSURANCE COMPANY

Freights and Disbursements

STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Manager, Southern California Marine Branch
740 SOUTH BROADWAY
LOS ANGELES

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

stances, of any legitimate insurable interest, and stated that underwriters have decided, long since, that they would have nothing to do with such business, as being a dangerous form of insurance.

Perils of Fog

Our coasts have been more beset with heavy fogs, particularly in the East, during the last few weeks than has been the case in years. Marine underwriters have been called upon to pay a fine accumulation of claims arising from collisions, foundering, etc., directly traceable to this menace to safe navigation. New York harbor, for example, has not had such fog visitations for fifteen years as have been seen this season. In such a congested harbor as this, fog involves problems of inland transit that are decidedly serious, particularly as it has to be remembered that ferryboats and other small craft are obliged to continue operating no matter what the weather conditions. The liability of the underwriter is directly concerned under the provisions of the inland vessel form, which reads as follows: "Loss, damage, detriment or hurt to said vessel against the adventures and perils of the harbors, bays, sounds, seas, rivers and other waters as specified in the trading warranties." Fog is held to be one of the insured perils of navigation under the inland form. Navigators are under obligation to maintain "moderate speed" under fog conditions, and the circumstance and conditions applicable are all clearly set forth in every standard work on seamanship.

Livestock Coverage

There is a considerable business for underwriters in insuring livestock in transit, and on the Eastern seaboard a substantial demand is regularly had for the coverage of cattle and sheep between this country and the United Kingdom and the Continent. Heavy movements of

this class are frequent when market conditions on the other side make the shipping of livestock for food purposes profitable. In response to this demand underwriters give a complete cover by adding to the regular policy conditions the risk of mortality through the inclusion of a clause which generally runs as follows:

"In addition to the perils insured under this policy it is hereby agreed to cover all risks of mortality, including jettison and washing overboard, each animal to be separately insured, but no claim (except general average and special charges) to attach in respect to any animal walking after being landed alive. War-ranted by the assured that the cat-

tle are shipped in a sound and healthy condition, and that competent attendants accompany them; and that in case of the death of any animal, such disposition shall be made of the carcass as to realize the fullest salvage for the benefit of this company."

All this is in addition to the perils regularly insured under the policy, so that mortality caused by fire, or stress of weather where the rolling of the ship causes the mortality, the loss is recoverable regardless of the above clause, but where no peril is encountered and the animal dies of natural causes (of which pneumonia is the predominate one), this clause secures the required full cover.

Charters and Sales

March 17, 1925.

STEAMER space on grain from the North Pacific to the United Kingdom and Continent is commanding a rate of 38/9 per ton for March loading, and in full cargo fixtures for the same business we have the following to report:

Japanese stmr. Kongosan Maru, wheat, 37/6, Balfour, Guthrie & Co.; British stmr. Linkmoor, grain, 37/6, charterers not mentioned.

British stmr. City of Vancouver is reported fixed for lumber to Australia, May loading, \$15, by W. L. Comyn & Co.

Fixtures for lumber to the Orient are as follows: Japanese stmr. Hokkai Maru, terms private, Canadian Trading Co.; Norwegian stmr. Hallgyn (or substitute), \$11, Mar.-Apr. loading, same charterers; Japanese stmr. Bankoku Maru, \$10.50, Mar.-Apr., charterers not mentioned; Japanese stmr. Koshin Maru, terms private, April loading, W. L. Comyn & Co.

American stmr. Romagne is re-

ported fixed with lumber from the North Pacific to New York, \$14.50, Mar. loading, charterers not mentioned; American stmr. Onondago, British Columbia to north of Hatteras, terms private, South Alberta Lumber Co. and American stmr. Juvigny, North Pacific to New York, \$14.50, Apr.-May loading, charterers not mentioned.

American stmr. Samoa is reported fixed from Eureka to Guaymas with ties, terms private, prompt loading, Hammond Lumber Co.

The following steamers have been reported taken on time charter: Danish m.s. Indien, North Pacific to Australia, one trip, \$1.80, Apr. loading, American Trading Co.; Norwegian stmr. Tolabot, San Francisco to Australia, one year, option 21 months, \$9750 monthly, J. J. Moore & Co., Inc.; British stmr. City of Vancouver, one year, delivery North Pacific, terms private, W. L. Comyn & Co., and refixed to Gillespie for one year.

The following sales have been re-

ported: American schr. Muriel, sold to Mexican interests, \$3300; American tanker Betterton, Frank W. Seth to Associated Oil Company, San Francisco; American schr. C. A. Thayer, P. M. Nelson to J. E.

Shields, Seattle; American schr. Coquille River, National Steamship Co., to Winchester Lumber Co.; American bktin. Norwhal, Allen Knight to Captain F. D. Clendenning and Captain O. C. Olsen, Santa Barbara,

\$2500; tug Bahada, Los Angeles Shipbuilding & Drydock Co. to Gilkey Brothers, Anacortes; American tanker W. S. Porter, Associated Oil Co. to Italian parties.

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Some Recent Books

For Underwriters and Operators

Carriage of Goods by Sea Act, 1924, by Sanford D. Cole. 140 pages, bound in tan buckram, with black stampings; published by Effingham Wilson, London. Price 60 cts.

This very convenient and handy volume explains concisely the meaning of the Hague Rules as they are expressed in the Carriage of Goods by Sea Act of 1924. The introduction shows the various movements and circumstances leading up to the adoption of this act by the British Parliament. Many references are made to cases in admiralty courts and to the principal British works of reference. The act is taken up article by article and explained in considerable detail. An appendix gives the texts of the Hague Rules of 1921 in both English and French, also the text of the Harter Act of the Congress of the United States and the act respecting the Water Carriage of Goods passed May, 1910, by the Canadian Parliament.

The book is very well indexed and should be a very convenient work of reference.

Interaction Between Vessels, by R. B. Bodilly. 132 pages, bound in green buckram with black stampings; published by D. Van Nostrand Company, 8 Warren Street, New York. Price, \$3.50 net.

Large vessels under way displace enormous volumes of water and set up forces which often exert great and even disastrous influence on other vessels within their range. This fact has been appreciated only within recent years, and has been very little studied. The book under review codifies the knowledge available and deducts therefrom certain general proofs, hoping that a larger study may be induced and that navigating officers and seamen may anticipate the behavior of their vessels in various circumstances in close proximity to vessels of equal or larger size.

The famous case of the collision between the Olympic and the Hawke is thoroughly investigated in the text. The main point brought out is that there are always "vast and

only partially understood forces acting on every ship at sea and that no amount of theory can relieve the master of a vessel from the duty of exercising the greatest care at all times. Where vessels are necessarily crowded together, slow speed is undoubtedly the chief factor pertaining to safety. The course should be altered as little as possible and as gradually as possible. . . . Whenever possible the distance between ships should be not less than the length of the longer vessel."

We feel sure that all navigators will be interested in a study of this book.

The Stockholm Conference on General Average and the York-Antwerp Rules, 1924, with notes, by Sanford D. Cole. A 75-page paper bound book published by Effingham Wilson, London. Price, 60c.

The author of this book acted as English Honorary Secretary of the Maritime Section of the Stockholm Conference. This conference had before it for approval the York-Antwerp Rules of General Average. After a thorough discussion among the representatives of the maritime nations present, these York-Antwerp Rules were revised to bring them into line with modern requirements, and the amended text was adopted by the conference as the York-Antwerp Rules of 1924.

The book under review gives a complete account of the discussions at the Stockholm Conference and a full text of the new rules of 1924 as compared with the old rules of 1890.

The Bureau of Navigation, Its History, Activities, and Organization, by Lloyd M. Short. 125 pages, bound in blue buckram with gold stampings; published by The Johns Hopkins Press, Baltimore, Maryland. Price, \$1.

This volume is No. 15 of Service Monographs of the United States Government as prepared by the Institute for Government Research at Washington, D. C.

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AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

MARE ISLAND AND PORTSMOUTH YARDS TO BUILD SUBMARINES

THE Navy Department has confirmed reports that two submarines authorized by the last Congress will be laid down about October 1, 1925; one at Mare Island, California, and the other at Portsmouth, New Hampshire. Plans are now being prepared at the Portsmouth Navy Yard. The new divers will be larger than any now in existence and will cost about \$4,500,000 each. Engines for both submarines will be built at the New York Navy Yard.

Mare Island Navy Yard is now preparing Ways No. 2 for the construction of the hull of this submarine.

The Navy Department has also announced that the New York Navy Yard will build one of the two 10,000-ton light cruisers authorized by the Navy Appropriation Bill and bids will be asked from private yards for the other. The New York Navy Yard will also have the job of building the engines for the six new river gunboats provided by the recently passed Navy Appropriation Bill. The hulls of these boats will probably be built in China.

Assignment has been made to East Coast Navy Yards for the modernization of battleships as follows: Arkansas and Wyoming to the Philadelphia Navy Yard; Florida and Utah to the Boston Navy Yard; Texas and New York to the Norfolk Navy Yard.

NEW APPLICATION OF DIESEL-ELECTRIC PROPULSION

THE W. S. McChesney, Jr., a sidewheel ferryboat owned by the Falls Cities Ferry & Transportation Company of Jeffersonville, Indiana, is to be equipped with diesel-electric drive. This is the first application of electric propulsion to a ferryboat of this type in America.

The boat has been in passenger and freight service between Louisville, Kentucky, and Jeffersonville, Indiana, on the Ohio River since 1912, using reciprocating engines for motive power. The new equipment will consist of two Fairbanks-Morse diesel engines, direct connected to two 175-kilowatt, 230-volt, direct current generators. Power from the generators will be used in driv-

ing two 180-horsepower motors, running at 425 revolutions per minute at full speed. Through a system of double reduction gears the motors will be connected to the two paddlewheels, turning at 14 revolutions per minute. The main generators will also supply power for the illumination of the boat and for running the boat's auxiliaries. All the electric equipment will be of General Electric manufacture.

Economy is the outstanding advantage claimed for the new type of propulsion. By operating with less fuel, more trips can be made without refueling and there should be no standby losses as are experienced by steam vessels when docking or idle. The electric drive is also expected to afford greater flexibility in maneuvering and a higher average ship's speed. Absence of cinders and dust is also an advantage of the use of diesel-electric propulsion equipment.

A single generator only will be needed for running the boat at low speeds. Further economies are expected from this. By the use of but one generator, approximately 75 per cent of full speed can be attained, the current from the one machine being used to operate both propelling motors.

BIDS FOR AUXILIARIES OPENED

BIDS were opened on March 6 by the Department of Maintenance and Repair of the Emergency Fleet Corporation at their offices in New York for the construction of forty-nine auxiliary marine oil engines for use in combination with diesel engine installations on the eighteen Shipping Board vessels selected for conversion to motorships. Captain R. D. Gatewood, director of the Department of Maintenance and Repair, announced that bids had been received from fourteen manufacturers and due to the fact that alternate propositions were submitted in nearly every instance and bids were made by each concern on several engines, it would take several days to compare bids before awards could be made. The firms submitting bids were:

Bessemer Gas Engine Company; Bethlehem Shipbuilding Corporation, Ltd.; Busch Sulzer Bros. Diesel Engine Company; C. & G. Cooper Com-

pany; James Craig Engine & Machine Works; William Cramp & Sons Ship & Engine Building Company; Fairbanks-Morse & Company; Fulton Iron Works Company; Lombard Governor Company; McIntosh & Seymour Corporation; New London Ship & Engine Company; Pacific Diesel Engine Company; Union Gas Engine Company; Worthington Pump & Machinery Corporation.

IMPORTANT SHIPBUILDING CONTRACT

At a cost of of \$1,500,000 each, the Newport News Shipbuilding & Drydock Company will build two combination passenger and freight steamers for the Merchants & Miners Line, this yard having submitted lowest bids for this work.

These two vessels are to be substantially the same as the steamers Allegheny and Berkshire, recently completed by the Federal Shipbuilding & Drydock Company for this same line.

REPAIRS TO SHIPPING BOARD VESSELS

The Shipping Board has announced that its managing agents will hereafter have full control over all repair jobs in which the cost does not exceed \$5000 in the case of cargo vessels, or \$10,000 in the case of passenger ships. This plan is part of the general program of President Palmer of the Emergency Fleet Corporation for increasing efficiency and economy of operation in all branches of the service. Operators are also to be put upon their mettle in the matter of reducing stevedoring costs. A system with this end in view is to be devised by a joint committee of operators and representatives of the corporation, headed by Huteh I. Cone, administrative assistant to President Palmer.

MORSE YARD AWARDED CONTRACT

Morse Dry Dock & Repair Company, Brooklyn, N. Y., received an important award during March in the contract for the reconditioning of the two Ward Line steamers Orizaba and Siboney. Work will include enlargement of public room space and the addition of 48 first cabin passengers. The Morse yard submitted a bid of \$367,900 for each vessel.

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Work in Prospect

The American-Hawaiian Steamship Company is reported to be considering the advisability of converting the steamers Arizonan and Alaskan to diesel-electric propulsion. The vessels are now laid up at New York, having been found too slow to keep pace with the more modern vessels of this fleet. The vessels

IN
PACIFIC COAST
SHIPYARDS

SHIP REPAIRING
SHIP BUILDING
RECONDITIONING
ENGINE REPAIRS

Alaskan and Arizonan were built at the Union Iron Works, San Francisco, in 1901 and 1903 respectively and are of 8537 and 8511 gross tons.

The Key System Transit Company, with main offices at Oakland, California, report that they have retained Captain Edward McCauley of the firm of Hibbs, McCauley & Smith, naval architects and marine surveyors, San Francisco, to prepare plans for two new ferryboats for the San Francisco-Oakland service. Plans and specifications for these two boats will not be ready for three or four months, but according to estimates the new vessels will be about a third larger than the diesel-electric ferries Hayward and San Leandro built for this company in 1922-1923.

Bids will be opened April 8 by the Board of Los Angeles Harbor Commissioners for a 95-foot gas boat equipped for fire-fighting purposes. The boat was designed by L. E. Caverly, marine engineer for the Los Angeles Shipbuilding Corporation.

The boat will be 95 feet long, 19.6 feet beam, 6.6 feet draft, with triple screw gas engines of some approved manufacture, designed to give a speed of 17 miles an hour. In addition to propelling machinery there will be four auxiliary engines of the same manufacture as the main engine for power for the pumps.

The Lower Columbia River Ferry Company has been incorporated to build and operate a ferryboat be-

tween Astoria and the Washington shore of the Columbia River. Plans call for a ferry 130 feet long, 37 feet beam, to be equipped with a 200-horsepower Atlas-Imperial engine, and will cost about \$60,000. L. H. Coolidge, Seattle, is the naval architect.

Plans will be completed in about ninety days for the construction of terminals and ferryboats for the

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IN ATLANTIC COAST SHIPYARDS

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New Castle-Pennsville Ferries, Inc., for which Chapman & Fisher Company, Inc., Philadelphia, are naval architects.

Recent Contracts

Robertson's Shipyard, Alameda, have a contract for eleven barges from the Missouri Valley Bridge & Iron Company, who have a \$2,000,000 contract for the foundation of the Carquinez Straits Bridge, which is building by the American Toll Bridge Company, San Francisco. The U. S. Steel Corporation has a contract for \$3,000,000 worth of steel for this bridge.

Bethlehem Shipbuilding Corporation, Wilmington, Delaware, has order for two tugboats for J. W. Sullivan Company and for two carfloats for the Delaware, Lackawanna & Wilmington Railroad.

Dravo Contracting Company, Pittsburgh, has contract for a diesel-engined towboat for Stewart Sand Company, Kansas City. They are also building a similar vessel for their own account.

Nashville Bridge Company, Nashville, Tenn., has contract for two diesel-electric towboats for the U. S. Army Engineers.

Chas. Ward Engineering Works, Charleston, W. Va., has an order for a tunnel propeller towboat for the Kelly Transportation Company to be equipped with two 360 B. H. P. diesel engines.

Kruse & Banks, North Bend, Ore., has received an order from the Arrow Tug & Barge Company of Astoria for a 65-foot seagoing diesel tugboat. The tug will be equipped with a 200 horsepower Atlas-Imperial diesel engine. Keel will be laid about April 1.

G. F. Matthews, Portland, Ore., has contract for building two ferries to operate between Westport and Cathlamet on the Oregon and Washington shores of the Columbia River. Ferries will be 64 feet long, 24 feet beam, and will be able to handle 10 to 15 automobiles. Fairbanks-Morse engines will be installed.

Keel-layings

Selma, snagboat, by Charleston Dry Dock & Machinery Co., for U. S. Army Engineers, Feb. 25.

U. S. Coast Guard vessel, by De Foe Boat & Motor Works, Feb. 28.

Barge for Pan American Petroleum Co., by Federal Shipbuilding Co., Feb. 18.

Hampton Roads, ferryboat, for Chesapeake Ferry Co., by The Pusey & Jones Co., Mar. 2.

Launchings

Georgia, towboat, for U. S. Army Engineers, by Charleston Drydock & Machinery Co., Feb. 24.

Cherokee, combination steamer for the Clyde Line, by Newport News Shipbuilding & Drydock Co., Feb. 10; Norfolk, dredge hull, for Atlantic, Gulf & Pacific Co., Feb. 23.

Coast Guard Cutters 259 and 260, by A. W. de Young Boat & Shipbuilding Co., Feb. 28.

Deliveries

Hawaiian Standard, diesel-electric tanker, to the Standard Oil Co. (Calif.), by Bethlehem Shipbuilding Corp. (Union Plant), Mar. 7.

Nenemoosha, yacht, for Alfred I. du Pont, by Newport News Shipbuilding Co., Feb. 14; two steel barges, to U. S. Army Engineers, Mar. 3.

Carfloat for Chesapeake & Ohio Ry., by New York Shipbuilding Corporation, Mar. 4.

District of Columbia, combination steamer, to Norfolk & Washington Steamboat Co., by The Pusey & Jones Co., Feb. 26.

Repairs

Moore Dry Dock Company, Oakland, Calif., was awarded contract for repairs to the Mexican government merchant steamer Washington on a bid of \$18,495 and 16 days. The steamer Washington was damaged in a collision with the freighter Santa Cecilia just south of San Francisco several months ago. The vessel is operated by the Mexican Free Ports Line between Mexico and California ports, and James Rolph & Co. are agents.

The Coast Guard cutter Algonquin, stationed at the mouth of the Columbia River, is to be overhauled by the Helser Machine Works, Portland, at a cost of \$15,000.

Contract was awarded to the H. R. L. Motor Company of Seattle the latter part of February for engine repairs to the American Oriental Mail Liner President Jackson, on a bid of \$36,801. Other bids submit-

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ted were: Draper Engine Works, \$41,000; Todd Dry Docks, Inc., \$41,393; Heffernan Engine Works, \$42,728; Pacific Coast Engineering Company, \$70,183.

* * *

Sun Shipbuilding Company, Chester, Pennsylvania, has been given contract on a bid of approximately \$67,000, to renovate the steamer M. J. Scanlon for the Hammond Lumber Company of California. The vessel is to be reconditioned for the lumber carrying trade.

* * *

Shipyard Notes

With a view to standardizing the power plants of the vessels of its fleet, the Canadian Fishing Company, Ltd., Vancouver, British Columbia, has made arrangements for the purchase of four Washington-Estep diesel engines constructed by the Washington Iron Works of Seattle. The engines are to be purchased through the Vancouver Machinery Depot. The contract provides for the possible purchase of six similar engines provided present plans of the Canadian Fishing Company materialize.

* * *

An order for what will be the largest electric anchor which was ever installed on a merchant vessel was awarded the middle of March to the Allan Cunningham Company of Seattle by the Union Plant of the Bethlehem Shipbuilding Corporation, San Francisco. The winch is to be installed on the tanker Lio, which

is being converted by Bethlehem to a diesel propulsion. The winch will be of 75 horsepower. The Allan Cunningham Company also has an order for a 35 horsepower warping winch for this same vessel.

* * *

The first of the two new steel frame river steamers to be used on the Sacramento River by the California Navigation & Improvement Company is nearing completion at the company's yard at Stockton, and the hull will probably be launched in April.

* * *

The U. S. S. Tennessee, one of the battleships of the Pacific Fleet, underwent complete reconditioning from truck to double bottoms and from peak to taffrail at the hands of her own crew, and with the assistance of the new Navy repair ship Medusa, which is a floating machine shop, foundry, and repair shop. The

reconditioning took almost two months, and the U. S. S. Tennessee is now back in practice and in first-class shape in every respect and ready for the naval maneuvers to take place off Hawaii during June.

* * *

The Atlantic Works, East Boston, Massachusetts, were awarded contract during February for ten gasoline hoisting barges for the New York Central Railroad, on a bid of \$18,439 each.

* * *

George W. Penketh has sold his interest in the Albina Marine & Iron Works, Portland, and has withdrawn as vice-president and general manager of the firm.

* * *

James Laing has purchased full control of the firm of Laing & Thompson Iron Works, Portland, chiefly devoted to marine work.

(Continued on page 27, Adv. Sec.)

Progress of Construction

Pacific Coast

BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT Potrero Works

Purchasing Agent: O. W. Streett.
Hawaiian Standard, hull 5326, diesel-electric tanker, Standard Oil Co. (Calif.); 210 LBP; 36 oil; 400 HP; Pacific Works diesel engs; keel Nov 1, 24; launched Jan 8, 25; delivered Mar 7, 25.

A. W. de YOUNG BOAT & SHIP-BUILDING CO., INC. Alameda, Calif

Purchasing Agent, Wm. Burns.
No. 260, hull No. 3, cabin cruiser, Coast Guard; 200 HP; Sterling high speed engs; launched Feb 28, 25.

No. 261, hull No. 9, sister to above; launched Feb 28, 25.

No. 262, hull No. 10, sister to above; launched Mar 7, 25; deliver April 25, est.

Yuha, snag boat, U. S. Engineers; 166 length; 37.8 beam; 5 depth; stern wheel, oil burning; accommodations for 40 crew; keel Nov 19, 24; launched Feb 7, 25; deliver Mar 1, 25, est.

South Shore II, twin-screw bay freighter, South Shore Port Co., S. F.; 105 long; 32 ft 8 in beam; 7 ft 8 in depth; 2 90 HP Atlas-Imperial diesel engs; keel Feb 7, 25, est; deliver Mar 1, 25, est.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

Two cannery tenders, Libby, McNeill & Libby, 68x17x7, keels Feb 15, 25, est; deliver April 15, 25, est.

Twelve gill net sailboats, Libby, McNeill & Libby, 28x9x3.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 HP; two WT express type boilers; 10,000 tons disp; keel April 1, 21; delivery April 25, est.

ROBERTSON'S SHIPYARD Alameda, Calif.

Two barges for Missouri Valley Bridge & Iron Co.; 72 x 28 x 5 ft

Seven barges for Missouri Valley Bridge & Iron Co.; 64 x 26 x 5 ft

Two barges for Missouri Valley Bridge & Iron Co.; 48 x 16 x 5 ft

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar
Thirty barges, Carnegie Steel Co.; 175x26x11 ft, 22 delivered.

Two dump scows, 1' S. Engineers, Pittsburgh; 180x26x10; deliver Aug 27, 25, est.

One towboat, Carnegie Steel Co.; 170x39x6 1/4; deliver spring 1925.

Six sand barges, J. K. Davison & Bro.; 135 x26x10; deliver June 25.

One acid tank barge, Carnegie Steel Co.; 175 ft by 26 ft by 11 ft; deliver summer 1925.

One cement barge, Kosmos Portland Cement Co.; 175x32x8.

Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.

No name, hull 790, self-unloading stone carrier, Bradley Transportation Co.; 566 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Burke.

No name, hull 98, passenger and freight steamer, New England Steamship Co.; 202 LBP; 36 beam; 10 loaded draft; 15 knots loaded speed; capacity 2000 passengers, 100 tons freight; one 4-cycle, TE eng, 1200 HP; 2 B&W boilers, 4450 square feet HS; keel Nov 1, 24; launch Mar 26, 25, est.

Fei-Seen, hull 99, schooner yacht, Irving Cox; 58 L.O.A.; 12 beam; 7 ft 6 in draft; Kermath engs; keel Jan 20, 25; launch May 25, est; deliver June 25, est.

Saghaya, hull 100, schooner yacht, same as above, for Howard C. Smith; keel Jan 20, 25; launch May 25, est; deliver June 25, est.

Flying Fish, hull 101, schooner yacht, same as above, for W. F. Carey; keel Jan 23, 25; launch May 25, est; deliver June 25, est.

Margaret Mary, hull 102, schooner yacht, for John Bussert; 58 L.O.A.; 12 beam; 7-6 draft; Red Wing eng; keel Feb 3, 25; launch May 25, est; deliver June 25, est.

Cygnat, hull 103, schooner yacht, for Paul Hammond; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Feb 6, 25; launch May 25, est; deliver June 25, est.

Seven Seas, hull 104, schooner yacht, for Van S. Merle Smith, same as above; keel Feb 23, 25; launch May 25, est; deliver June 25, est.

Mystic, hull 105, schooner yacht, for Irving Eldredge, same as above; keel April 15, 25, est.

Diamond W., hull 106, schooner yacht, for Chas. E. F. McCann, same as above; keel Mar 14, 25, est.

Nokomis, hull 107, schooner yacht, for Wm. A. W. Stewart; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Mar 16, 25, est.

Venturer, hull 108, schooner yacht, for Harold Weason, same as above; keel Mar 18, 25, est.

Aveer, hull 109, schooner yacht, for Dave H. Morris, same as above; keel Mar 20, 25, est.

No name, hull 110, schooner yacht, for G. M. Heckscher; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr 8, 25, est.

Seafarer, hull 111, schooner yacht, for Parker Carving; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Apr 10, 25, est.

Charmian, hull 112, schooner yacht, for Newcomb Carlton; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr 13, 25, est.

Shearwater, hull 113, schooner yacht, for F. L. Crocker; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Apr 15, 25, est.

No name, hull 114, schooner yacht, for Julius Fleishman, same as above; keel Apr 17, 25, est.

No name, hull 115, express cruiser, Clifford Brook, 50 ft over-all; 10 ft beam; 3 ft draft; keel Jan 20, 25; launch and deliver May 25, est.

No name, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 HP each; keel Jan 20, 25; launch and deliver May 25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N. Massachusetts, hull 1400, battleship U.S.N.; to be scrapped.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmington, Del.

Hull 3496, tug, J. W. Sullivan Co., hull only; 93 ft 6 in LBP; 25 ft beam; 9 loaded draft.

Hull 3497, same as above.

Hull 3498, carfloat, D. L. & W. R. R.; 320 LBP; 40 beam; 5 loaded draft.

Hull 3499, sister to above.

BETHLEHEM SHIPBUILDING CORPORATION, SPARROWS POINT PLANT Sparrows Point, Md.

Hull 4234, dredge hull, Ellicott Mach. Corp.; keel Jan 14, 25.

CHARLESTON DRY DOCK & MACHINERY COMPANY Charleston, S. C.

Purchasing Agent: Charles R. Valk.

Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 LBP; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 HS; keel Nov 24, 24; launched Feb 24, 25; deliver Oct 25, est.

Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 LBP; 33 beam; 2 ft 11 in loaded draft; 1 Scotch boiler, 11 ft 6 in by 12 ft 3 in; keel Feb 25, 25; launch May 25, est; deliver Dec 25, est.

CLINTON SHIPBUILDING & REPAIR COMPANY Philadelphia, Pa.

No name, hull 45, oil barge, City of Phila.; 88 LBP; 30 beam; 8 loaded draft; keel June 24, est; launch Jul 24, est; deliver Aug 24, est.

COLLINGWOOD SHIPBUILDING CO.

Collingwood, Ontario

Purchasing Agent: E. Podmore.

No name, hull No. 74, bulk freighter, Geo. Hall Coal & Shipping Corp., Montreal; 252 LBP; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface condensing; 700 HP; 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Jan 31, 25; launch May 9, 25, est.

No name, hull No. 75, bulk freighter, sister to above; keel Feb 2, 25; launch June 2, 25, est.

No name, hull No. 76, bulk freighter, sister to above; keel May 2, 25, est; launch June 27, 25, est.

CONSOLIDATED SHIPBUILDING CORPORATION Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 180-HP Winton diesel engs.

Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.

Hull 2797, cruiser for R. F. Hoyt, 81 ft long; 2 Wright & Typhoon engs, 500 HP each.

Hull 2798, cruiser for H. C. Stutz, 65 ft long; 2 180-HP Speedways.

Hull 2799, cruiser for Elliott & Co., 44 ft long; 180-HP Speedway.

Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150-HP Speedways.

Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300-HP Speedways.

Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300-HP Speedways.

Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO.

Philadelphia, Pa.

Purchasing Agent: Ed. C. Geehr.
Malolo, express passenger and freight liner, Matson Navigation Co.; 582 L.O.A.; 577 length at water line; 83 beam; 35 depth; displacement 22,050 tons; 8250 DWT; speed 21 knots regular, 23 tons maximum; 25,000 shaft horsepower; Cramp-Parsons turbines; oil burning B&W water-tube boilers; keel June 25, est.



THE BABCOCK & WILCOX BOILER

THE STEAMSHIP MAUI, FLAGSHIP OF THE
MATSON FLEET EQUIPPED WITH
BABCOCK & WILCOX MARINE WATER TUBE BOILERS
BABCOCK & WILCOX MECHANICAL OIL BURNERS
BABCOCK & WILCOX DOUBLE FRONT UNIFORM DRAFT SYSTEM

BABCOCK & WILCOX

WATER TUBE MARINE BOILERS AND SUPERHEATERS

FOR NAVAL AND MERCHANT VESSELS OF ALL CLASSES
Installations total over Six Million Horsepower.

MECHANICAL ATOMIZING OIL BURNERS

FLEXIBLE

RELIABLE

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Over Five Thousand Installed in Naval and Merchant Vessels.

CONCENTRATION APPARATUS

FOR MEASURING SURFACE CONDENSER LEAKAGE, BOILER
WATER SALINITY AND OTHER USES.

OIL SEPARATORS

FOR AUTOMATICALLY REMOVING OIL FROM BOILER FEED WATER

THE BABCOCK & WILCOX CO.

New York

San Francisco

CHAS. C. MOORE
Pacific Coast Manager

Sheldon Building, First St., cor. Market

SAN FRANCISCO, CAL.

DEFOE BOAT & MOTOR WORKS
Bay City, Mich.

Purchasing Agent: G. O. Williams.
C. G. 115-129, inc.; 15 patrol boats for U. S. Coast Guard; 75 long; 13-6 beam; 5 delivered.
Hull No. 79, wooden cruiser, E. F. Cooley-Lansing; 42 ft 10 in long; 10 ft beam; 3 ft draft; 12 mi speed; Scripps E-6 gas engs; keel Feb1/25; launch May10/25, est; deliver June 2/25, est.

Hull No. 80, steel vessel, U. S. Coast Guard; 98 LHP; 23 beam; 7 loaded draft; 210 DWT; 300 IHP; diesel engs; keel Feb28/25.

Hull No. 81, sister to above; keel Feb28/25.
Hull No. 82, sister to above.
Hull No. 83, sister to above.
Hull No. 84, sister to above.
Hull No. 85, sister to above.
Hull No. 86, sister to above.
Hull No. 87, sister to above.
Hull No. 88, sister to above.
Hull No. 89, sister to above.

DRAVO CONTRACTING COMPANY
Pittsburgh, Pa.

Hulls 341-4, 4 sand and gravel barges, builder's account; 135x27x8; 320 gross tons ea.

Hull 352, mixer boat No. 5, owner's account; 150 gross tons.

Hulls 354-375, inc., 22 steel barges for Mississippi River Commission, Memphis; 120 ft by 30 ft by 7 ft 6 in; 430 gro tons each.

Hulls 376-381, inc., 6 steel barges, J. E. Davison & Bros., Pittsburgh; 135 ft by 26 ft by 10 ft; 330 gro tons each.

Hull 405, diesel engined towboat, for Stewart Sand Co., Kansas City; 120 IHP; 25 gro tons.

Hull 406, diesel engined towboat, builder's account; sister to above.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY
Kearny, N. J.

Purchasing Agent: R. S. Page.
El Oceano, hull 81, freight stmr. Southern Pacific Co.; 433 LBP; 56 beam; 26 loaded draft; 14½ loaded speed; 7950 DWT; turbine tngs, 6000 IHP; 4 B&W boilers; keel Sept22/24 launched Feb14/25; deliver Apr/25, est.
No name, hull 82, barge, Pan American Petroleum Co.; 150 LBP; 30 beam; 10 loaded draft; 540 DWT; keel Feb19/25.

GREAT LAKES ENGINEERING WORKS
River Rouge, Mich.

Purchasing Agent: Chas. Short.

Joseph H. Frantz, hull 248, bulk freighter, Columbia S. S. Co., Cleveland; 618 LBP; 592 LHP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel June1/24; launched Oct 18/24; deliver Mar20/25, est.

William C. Atwater, hull 249, bulk freighter, Wilson Transit Co.; 580 LBP; 60 beam; 20 loaded draft; 12 mi speed; 12,000 DWT; TE 2000 IHP; 3 Scotch boilers; 13 ft 6 in by 11 ft; keel Dec23/24; launch Apr15/25, est; deliver June/25, est.

No name, hull 250, bulk freighter, Cleveland Cliffs S. S. Co., Cleveland; 618 LBP; 592 LHP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Feb10/25; launch June1/25, est; deliver July25/25, est.

No name, hull 251, bulk freighter, Columbia S. S. Co., Cleveland; 618 LBP; 492 LHP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Apr10/25, est; launch Aug1/25, est; deliver Oct1/25, est.

MANITOWOC SHIPBUILDING CORPORATION
Manitowoc, Wis.

Purchasing Agent: H. Meyer.

No name, hull 214, twin-screw ear ferry, Ann Arbor Railway Company; 360 LBP; 56 beam; launched Dec30/24; delivered Feb20/25, est.

No name, tug, Milwaukee Tugboat Line; 75 LHP; 21 beam; 10 loaded draft; 12 mi speed; 800 gro tons; 500 IHP engs; launched Jan31/25; deliver Apr/25, est.

MARIETTA MANUFACTURING CO.
Point Pleasant, W. Va.

Purchasing Agent: S. C. Wilhelm.

No name, hull 138, sternwheel towboat; 125x10x5-2; tandem comp engs; Western rivers return tubular boilers; keel May1/24; launched Oct2/24.

No name, hull 139, ferryboat; 141 ft long; 30 ft beam; 5 ft 2 in draft; tandem comp engs; Western rivers return tubular boilers; keel May 15/24; launch Feb15/25, est; deliver Apr1/25, est.

MIDLAND BARGE COMPANY
Midland, Pa.

Purchasing Agent: H. S. Neal.

Dolly Barrett, steel flush deck barge, Barrett Line, Cincinnati; 225 ft long; 36 ft beam; 8 ft depth; 1500 DWT; keel Dec29/24; launched Feb7/25.

Stella Barrett, sister to above; launch Mar11/25, est.

Adeline Barrett, sister to above.

Eric Barrett, sister to above.

Lawrence Barrett, sister to above.

Grace Barrett, sister to above.

No name, steel wharfloat, Coney Island, Inc., Cincinnati, O.; 225 ft long; 45 ft beam; 6 ft

depth; steel superstructure and roof; deliver May1/25, est.

MIDLAND SHIPBUILDING COMPANY, LTD.
Midland, Ontario

Purchasing Agent: R. S. McLaughlin.

Glenifer, hull 12, bulk freighter, Great Lakes Transp. Co.; 560 LBP; 60 beam; 20-6 draft; 3 Scotch boilers; keel May8/24; launched Nov18/24; deliver May/25, est.

No name, hull 14, single deck freighter, Great Lakes Transp. Co., Ltd., Midland, Ontario; 582 LHP; 60 beam; 20 loaded draft; 11 knots speed; 12,000 DWT; TE engs, 2800 IHP; 3 Scotch boilers, 15 ft 3 in x 11 ft 6 in; keel Mar 16/25, est; launch Oct/25, est; deliver Nov/25, est.

NASHVILLE BRIDGE COMPANY
Nashville, Tenn.

Purchasing Agent: Leo E. Wege.

Colvert, hull 83, steamboat, U. S. Govt.; 128 LHP; 26 beam; 4 loaded draft; keel Jan14/25; launch and deliver Mar25/25, est.

Hull 84, barge; 120 LHP; 30 beam, 7 loaded draft; keel Feb7/25; launch and deliver Mar 20/25, est.

Hull 90, deck barge; 180 LHP; 36 beam; 7 loaded draft; keel Dec1/24; launched and delivered Jan16/25.

Chamberlin, hull 91, steamboat hull, principals not named; 140 LHP; 31 beam; 5 loaded draft; keel May1/25, est; launch and deliver June 15/25, est.

Nashville B., hull 92, diesel towboat, builders' account; 110 LHP; 28 beam; 5 loaded draft; 400 IHP diesel engs; keel Apr1/25, est; launch May15/25, est.

No name, hull 93, barge, for builder's account; 120 LHP; 30 beam; 7 loaded draft; keel Mar 1/25, est; launch and deliver Apr1/25, est.

No name, hull 94, diesel-electric towboat, U. S. Engineers; 70 LHP; 17 beam; 4 draft; 150 eng.

No name, hull 95, same as above.

NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY
Newport News, Va.

Purchasing Agent: Jas. Plummer, 233 Broadway, New York City.

Cherokee, hull 274, combination steamer, Clyde S. S. Co.; 387-6 LBP; 54 beam; 31-6 depth; 14½ loaded speed; 2600 DWT; Newport News Curtis engs; 4200 SHIP; 4 Scotch boilers; keel Aug12/24; launched Feb10/25; deliver June 2/25, est.

Seminole, hull 275, sister to above; keel Sept 9/24; deliver Aug/25, est.

Coamo, hull 280, combination steamer, New York and Porto Rico Steamship Co.; 412 LHP; 59 ft 6 in beam; 35 depth; speed 15½ knots; Newport News-Curtis turbines; 6000 SHIP; Scotch boilers; keel Jan19/25; launch July/25, est.

Nenemosh, hull 281, yacht for Alfred I. du Pont; 130 LBP; 22 beam; twin screw; diesel engs; keel Oct6/24; launched Nov22/24; delivered Feb14/25.

Norfolk, hull No. 282, dredge hull, Atlantic Gulf & Pacific Co. of New York; 162 long; 38 beam; 14 depth; keel Nov19/24; launched Feb23/25; deliver Apr/25, est.

Hulls 285-286, two steel barges, U. S. Army Engineers, Wilmington, Del.; 60 ft long; 22 beam; 4 ft depth; keel Feb6/25; launched Feb 25/25; delivered Mar3/25.

No name, hull 287, combination steamer, Clyde S. S. Co.; 387 ft 6 in LHP; 54 ft beam; 31 ft 6 in draft; 14½ loaded speed; 2600 DWT; Newport News-Curtis turbines; 4200 SHIP; 4 Scotch boilers; keel Apr/25, est; deliver Jan1/26, est.

NEW YORK SHIPBUILDING CORP.
Camden, N. J.

Purchasing Agent: L. G. Buckwalter.

Hull 302, earfloat, Chesapeake & Ohio Ry. Co.; 4 tracks; 370 ft long; keel Nov24/24; launched Feb25/25; delivered Mar4/25.

Hull 303, barge, International Cement Corp.; 162 ft long; keel Dec2/24; launched Feb2/25.

No name, hull 304, diesel tanker; 480 ft. long; 9500 gro tons; 13,000 DWT; New York-Works poor engs, 3200 IHP.

Hull 305, dredge hull, United Dredging Co.; 170 ft long; keel Dec24/24.

THE PUSEY & JONES CO.
Wilmington, Del.

Purchasing Agent: James Bradford.

District of Columbia, hull 1028, steel comb. stmr., Norfolk & Washington Smbt. Co., Washington, D. C.; 297-7 LBP; 51 beam; 13 loaded draft; about 18 mi speed; 1600 DWT; single screw; 4 cyl TE engs, 2400 IHP; 4 Scotch boilers; 12-6; keel May3/24; launched Sept13/24; delivered Feb26/25.

Hampson Roads, hull 1029, automobile and passenger, twin screw, double deck ferryboat, The Chesapeake Ferry Co., Norfolk Ferry Co., Norfolk, Va.; 197 LBP; 59 ft 8 in beam; 9 ft 3 in loaded draft; 14 mi speed; 2 comp. engs; 2 Gunboat boilers; keel Mar2/25; launch June 15/25, est; deliver July15/25, est.

STATEN ISLAND SHIPBUILDING COMPANY
Staten Island, N. Y.

Purchasing Agent: R. C. Miller.

No name, hull 749, steel diesel-electric tug-boat, Penn. R. R. Co.; 105 LBP; 24 beam; 13.5 loaded draft.

No name, hull 750, steel diesel-electric tug-boat, Atlantic Refining Co.; 94 LBP; 21 beam; 11.5 loaded draft.

No name, hull 751, sister to above.

No name, hull 752, sister to above.

SUN SHIPBUILDING COMPANY
Chester, Penn.

Purchasing Agent: H. W. Scott.

No name, hull No. 83, towboat, International Petroleum Co., Toronto, Canada; 160 LBP; 44 beam; 3 loaded draft; 650 IHP; oil burning; keel Feb15/25; launch Apr15/25, est.

One derrick barge, for Anderson Machine Corp., Ltd.; 70x30x6-2.

TEBO YACHT BASIN COMPANY,
Brooklyn, N. Y.

Purchasing Agent: R. C. Smith.

Murray Hulbert, hull 32, ferryboat, Dept. of Plant Structure, City of New York; 148 LBP; 53 ft beam over guards, 37 ft 6 in beam molded; 9 ft 9 in loaded draft; 11 knots loaded speed; 588 gross tons; comp engs; 2 B&W boilers, 3182 sq ft heating surface; keel Sept4/24; launched Dec27/24; deliver Mar1/25, est.

Edward Reigelman, hull 33, ferryboat, City of N. Y., sister to above; keel Sept4/24; launched Dec27/24; deliver Mar15/25, est.

No name, hull No. 34, ferryboat, City of N. Y., sister to above; keel Sept4/24; deliver Apr 15/25, est.

No name, hull No. 35, ferryboat, City of N. Y., sister to above.

No name, hull No. 36, ferryboat, City of N. Y., sister to above.

THE CHARLES WARD ENGINEERING WORKS
Charleston, W. Va.

Purchasing Agent: E. T. Jones.

Lookout, hull 33, towboat, U. S. Engineers, Nashville, Tenn.; 116 ft long; 29 ft beam; 5-6 depth; 2 surface condensing tandem comp engs; 300 IHP; 1 watertube boiler; coal burning; in duct draft; keel Apr17/24.

No name, hull 37, tunnel propeller towboat, Kelly Transportation Co.; 126 LBP; 25 beam; 5 loaded draft; 2 diesel engs; 360 BHP each.

Repairs**BETHLEHEM SHIPBUILDING CORPORATION, LTD.**
San Francisco

Converting from steam to diesel propulsion:

Lio. Engine, boiler and hull repairs, drydock and paint; Korrigan III, Walter A. Luckenbach, Grace Dollar, Bolivar, W. S. Porter (rudder repairs), Priscilla. Drydock, paint, misc.: Tamalpais, Venetia, U. S. A. T. U. S. Grant, Shabonoe, Engine, boiler, hull; Tahiti (also stewards), Waitemata (also drydock and paint).
Propellers: Daisy Gadsby, Maryland (also drydock).
Tailshaft repairs: West Islip, Sonoma, Annie Johnson. Furnish and install one Dake steering eng; Shell Oil Barges Nos. 5 and 6. Retube main boilers, drydock and paint; Argvill. Engine, boiler and hull; Chiapas. Misc. repairs, drydock and paint; Salina. One crankshaft; Paul Shoup. Misc. repairs, alterations, drydock and paint; S. O. Barge No. 93. Misc. repairs: Alaska Standard, W. S. Miller, Acasta, Mexican, Sonoma, Point Loma, West Calera, Pres. Madison, West Niwaria, Novo, Finland, Col. E. L. Drake, Daisy, K. R. Kingsbury, Buenos Aires, City of Panama, India Arrow, Broad Arrow, Pomona, Derhville, Georgian, Kentuckian, Hauraki, Peter Kerr, E. P. Rivley, Mary E. Moore, Orinda, Richmond, Floridian. Install 400 ft. anchor chain: Compagnie De Roleo.

San Pedro Works

Drydock, clean, paint and misc. repairs: Samoa, West Sequana, Shreveport, Wm. Donovan, Daisy Grav, Cascade, Yankee Arrow, Illico, Emelio. Misc. repairs: Barge Lahania, Newport, Ibec, El Grillo, Liebre, Tahama, Teion, San Fernando, President Garfield, Adna, Novo, Tusculana, Cricket, Los Alamos, Tennessee, San Gaspar, Bohemian Club, Ecuador, San Lorenzo.

NAVY YARD
Bremerton, Wn.

Misc. repairs: Pennsylvania, Thomson, Stoddert, Eagle No. 57. Misc. repairs and docking: Farouhar, Eagle No. 32. Misc. repairs incidental to operation as district craft: Mahanoe, Tatnuck, Swallow, Iroquois, Pawtucket, Sotoyomo.

VICTORIA MACHINERY DEPOT CO., LTD.
Victoria, B. C.

Boiler repairs: Canadian Winner tug Sadie. Make and fit new stack: Grainer. Extensive engine and deck repairs: Famous. Dock, clean and paint, renew plates: Wm. Grant, Blue.

LUBRICATION ON SHIPBOARD

An Open Forum—Questions on Lubrication Problems Are Invited; They Will Be Answered in Order of Receipt Through the Co-operation of the Associated Oil Company's Staff of Lubrication Engineers

INSTALLMENT No. 10

Question No. 43.—Are atomizers installed in steam lines of any advantage in the saving of cylinder oil? What is the proper form of atomizer and how should they be installed to obtain the best results; also what kind of cylinder oil gives the best results?

Answer.—The introduction of atomizers in the steam line is of great importance and the engineer in charge should always see that they are properly installed and in operation. The atomizer acts as a distributor whereby the oil is broken up and separated into very small particles by the velocity of the steam.

The shape or style of the atomizer employed depends largely upon the engineer, as different engineers have their own particular ideas on this subject. Some engineers make a sort of spoon shaped affair by upsetting the end of the pipe and then cutting slots in the bottom with a hacksaw, through which the oil is forced by the action of the passing steam as shown in sketch. Several other types will give good satisfaction if installed about three feet from the throttle and if possible in the vertical section of the steam line, which gives the oil a chance to form a mist or spray and to become thoroughly mixed with the steam.

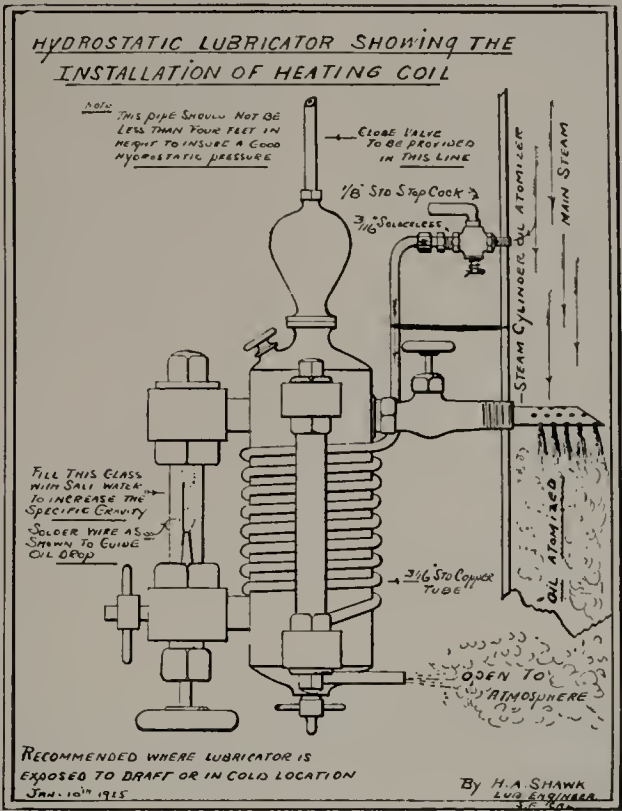
The end of the atomizer should always extend well past the center of the steam line and the holes or slots should not start nearer than one inch from the interior surface of the steam pipe; this to avoid the oil being blown against the sides of steam pipe and deposited there.

Care should be exercised in installing the atomizer, and the top side should be center punched to avoid its being turned upside down when screwing same into the pipe; also the atomizer should be brazed into the fitting or pinned to avoid its being unscrewed or working loose by the centrifugal action of the passing steam. Should the atomizer work adrift and jam your throttle or pass into the valve ports, a bad accident might occur.

Brass is the best material to use because iron will soon rust and likewise periodical inspection is necessary to determine its condition.

The oil is virtually turned from a liquid into a fine spray or cloud, which, mixed with the admitted steam, carries the lubrication to every exposed portion of the cylinder bore, valve surfaces, piston rings, and rods, and this fact is demonstrated by the oil film shown and maintained on piston rods without the application of the swab or outside lubrication.

When a mineral oil is compounded with a certain portion of animal fats, such as tallow or lard, they tend to form permanent emulsions which cling tenaciously to the metal surfaces and successfully resist the washing action of the condensation. In the marine reciprocating steam engine, the use of an excessive amount of animal fat is of course to be avoided, but the general opinion of marine engineers that



only a straight mineral steam cylinder oil is suitable is entirely erroneous, as a small amount of good compound is a distinct advantage and often a necessity. Without the tallow compound or its equivalent, a greater amount of cylinder oil must be consumed to obtain equal or inferior lubrication. In other words, the saponifying properties of the animal fat in the presence of hot water enables the compounded oil, if properly atomized, to mix and coat every surface with a thin film of lubrication which remains on the frictional surfaces and cannot be washed away, which is not true of a straight hydrocarbon or pure mineral oil.

Any engineer can demonstrate this to himself with a piece of polished metal on which is poured a small sample of both mineral and compounded oil. Add a few drops of hot or cold water and notice the results as you mix the two with your finger. The compounded oil will soon form a smooth

semi-fluid product and turn lighter in color. In fact, the result is a fluid grease which coats the surface, fills up all the pores of the metal, and can hardly be wiped off, while a straight mineral oil refuses to combine with water, and if the plate is tipped the oil will actually run off and leave the water behind. Most people are familiar with the tendency of animal fats to adhere to frying pans, which are never entirely free from the grease except by actual exposure to naked flame.

Now, another point for consideration is that in swabbing piston rods with a slightly compounded oil, it forms the coating referred to above by combining with moisture which is always present by condensation on the rod, and this puts that beautiful dark polish on the rod so much desired by engineers. Proper lubrication on the rod means the elimination of packing trouble and the danger of hot and scored rods. It is good practice to operate with the packing drains closed for a few minutes following the application of the oil by the swabbing brush, this to properly emulsify the oil as hereinbefore stated.

What do you do when you get a hot rod? Apply soft soap, don't you? It is the best kind of an agent for cooling the rods and an old standby with marine engineers. What is soap? Soap is a saponified animal fat and hence by using a slightly compounded oil you actually place a constant safeguard on your rod.

When steam is admitted to the cylinder, it carries with it a certain degree of temperature depending upon the steam pressure on the boilers. As long as the valve is open for boiler pressure to be maintained in the cylinders, the temperature is constant; but when the point of cut-off is reached and the valve closes, then the balance of the stroke is completed under saturated conditions and the temperature constantly goes down as the steam is expanded. Thus your

cylinder alternately becomes a condenser and a boiler. The cylinder and piston head are heated by the live steam. Heat is given up by the steam due to condensation and the condensed water is then boiled again and vaporized during the exhaust.

This gives you some idea of what a steam cylinder oil has to stand up under in the performance of its duty. Piston valves are much more easily lubricated than slide valves. Vertical engines have the advantage over horizontal, and engines equipped with tail rods eliminate a lot of cylinder and piston friction and are therefore more easily lubricated.

Saturated steam conditions are more easily met than superheated steam conditions. Every individual case should be carefully studied and the proper recommendations made. The condition of the boiler water is of utmost importance and same should be tested for alkalinity and acidity. Boiler compounds directly affect cylinder lubrication as they are made up of such well known grease solvents as soda ash, potash, caustic soda, etc. If carried into the cylinder in sufficient quantity by the steam, it will actually defeat the lubrication even when the best grades of cylinder oil are employed.

Oil carried over by the exhaust steam must be trapped in the hot well because if allowed to enter the boilers it will soon coat the interior surfaces of the boiler with a non-heat conducting film which will greatly reduce the efficiency and is extremely difficult to remove besides becoming in time a source of real danger as when sufficient quantity accumulates, the water in the boiler cannot carry the heat away fast enough from the plates and tubes and they become overheated and blister and may even cause a collapse and result in a boiler explosion.

Lubrication is a study and by calling in the proper authorities, you can always obtain the proper lubrication for your particular job and have somebody to stand back of the oil and guarantee results, therefore, it is always advisable to avail yourself of this privilege.

Question No. 44—When oil foams out of a generator bearing, what is the explanation and what is the remedy? We have two generators aboard our ship which for the past several trips have given us a lot of trouble. The vaporized oil gets into the armature and coats everything around the dynamo flat besides keeping us constantly on the alert to maintain the oil level. The bearings are oil ringed and previously have given us no trouble.

Answer.—Offhand, we would suggest that you drain out your present supply of oil and refill with an oil of heavier viscosity. As a suggestion and guide for proper viscosity of dynamo and motor oil, we would recommend about a 300 viscosity at 100 degrees Fahrenheit, for the lubrication of generator sets with oil ring bearings as found aboard ship. At atmospheric temperatures on the dynamo flat plus radiated heat, the viscosity of your oil will be lowered so that at 120 degrees Fahrenheit you will probably have about a 140 viscosity oil in your bearing sumps, which is about right. Do not carry your oil level too low, because the oil acts as a break on the revolving ring and keeps it from churning and agitating the oil. With too much ring speed, the oil will be vaporized by forcing air bubbles into the supply and this will account for your trouble. The oil actually floats away in the form of small balloon-like bubbles and, being brought into contact with the air, rapidly oxidizes, which you will notice by the rapidly darkening color in your bearings.

To satisfy yourself if this is the trouble, just pour a small quantity of some heavy viscous oil, such as a mineral steam cylinder oil, into one of your generator bearings and watch the result. This suggestion is merely made to convince you that by building up the viscosity you will eliminate the foaming, as an oil such as a steam cylinder oil is far too heavy for the successful lubrication of dynamo and motor bearings. As stated before, an oil at about 300 viscosity at 100 degrees Fahrenheit would be the proper recommendation.

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Ships, Engines, Turbines and Boilers
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**FEDERAL SHIPBUILDING
AND DRY DOCK COMPANY**

SHIPBUILDERS-ENGINEERS-REPAIRERS

PLANT KEARNY, N. J.

SALES OFFICE 26 BEAVER ST., NEW YORK

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

A COMMUNITY LOSS

THE city of San Francisco lost a splendid citizen and the Bar of San Francisco an attorney of splendid abilities in the recent death of William Fuller Sullivan, attorney and secretary for the Ship Owners of the Pacific Coast.

William Fuller Sullivan was born in San Francisco October 19, 1870. His mother and father came here from New Bedford, Massachusetts. His father, Daniel T. Sullivan, arrived in California in 1862 and for many years occupied offices in the old Montgomery Block. He was the outstanding admiralty lawyer of the Pacific Coast during his time. As a young man he served under two administrations as assistant district attorney of San Francisco. A lawyer of the old school, he was a great scholar and had a profound knowledge and love of the Greek and Latin classics.

William F. Sullivan studied at the University of California for two years, and played baseball on the varsity team. He was a member of the Class of '91, but he did not graduate. He studied law in his father's office, and was admitted to practice shortly after he was 21 years old.

In the early part of his legal career he went to Sacramento and occupied offices with Hiram and Albert Johnson. He married Albert Johnson's daughter, Katherine Jeanette Johnson, and of this union there are four children, the oldest now ten years of age.

On his return to San Francisco, Mr. Sullivan specialized in admiralty law, thus following in his father's footsteps, and such was his success in this difficult branch of his profession that he was chosen attorney and secretary for the Ship Owners of the Pacific Coast, a position he held until his death. He was very highly esteemed among the shipping and lumber men of the Coast; also represented his association at the State Legislature; was a delegate to the National Chamber of Commerce at Washington, D. C.; and during the War was a Pacific Coast representative at the Washington and New York conferences called by the United States Shipping Board to bring western and eastern shipping men together.

When Hiram Johnson was Governor of California, Sullivan was twice offered judgeships, but refused them. He was also tendered an appointment on the United States Shipping Board, but preferred to remain in the special work he loved.

With a wide knowledge of law in general as a background, he became a leader among the Proctors in admiralty, but he will be remembered best as a man of wonderful kindness, of virile personality, a tender husband and father, and a companion whose conversational powers were enriched by his lifelong studies in history and the literary classics.

PACIFIC MAIL ANNUAL REPORT

Careful economies in the face of continued high cost of operations enabled the Pacific Mail Steamship Company to increase its net income for 1923 to \$338,309 in comparison with \$184,015 the year before, according to the annual report. Operating income was \$477,676, compared with \$293,421. Gale H. Carter, president, stated that the present situation did not warrant looking forward to any considerable increase in the volume of business this year, but it could be reasonably expected that the same leels would be maintained.

KELBER ACTIVE

George C. Kelber, for many years general claim agent of the Pacific Mail Steamship Company, and prior thereto general agent with a number of other widely known transportation organizations, has opened offices as an expert adjuster of marine insurance and steamship claims at 244 California street, San Francisco.

NEW POST

W. S. Race has joined the Miller-Hurst Corporation, foundry and industrial engineers. Mr. Race was formerly with the United States Rubber Company at their New York and Detroit offices.

CHANGES OF INTEREST

At a recent meeting of the board of directors of the Hooven, Owens, Rentschler Company, the following changes were made: Gordon S. Rentschler, who has become vice-president and assistant to the president of the National City Bank of New York and The National City Company, was elected chairman of the board of the Hooven, Owens, Rentschler Company; George A. Rentschler, Jr., was made president of the company; John H. Black, who was secretary of the firm, was made secretary and treasurer; Frederick B. Rentschler was made director and vice-president.

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J. R. Fitzgerald, agent.
215 Market street. Phone Douglas 9560.
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SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT.

SAILINGS—Intercoastal.

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Regular sailings between San Francisco, Seattle, Vancouver, B. C., Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corp., agents.
240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Kearny 5100.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland,

Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Passenger Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,
311 California street. Phone Garfield 6760.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

F. C. Bennett, Pacific Coast manager.

110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.

Mutual Life Building.

FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

A. E. BALLIN, president of the McIntosh & Seymour Corporation, visited the Pacific Coast during March and spent a week or two in San Francisco and the Bay region for the first time in fifteen years.

In an interview with a representative of Pacific Marine Review, Mr. Ballin expressed himself as greatly surprised at the tremendous growth of central and southern California areas. In company with C. G. Cox, Pacific Coast representative of McIntosh & Seymour Corporation, Mr. Ballin visited the majority of the industrial plants in the immediate vicinity and had an opportunity to make himself acquainted with the real progress being made here. He expressed himself as being delighted with the record made by McIntosh & Seymour engines in several fine marine installations on the Pacific Coast, particularly with the recent record of the Admiral Peary of the Pacific Steamship Company, and complimented the executives of Pacific Coast steamship companies for their vision and business enterprise in securing the best type of equipment for their vessels.

Mr. Ballin thinks that the Shipping Board should adopt a resolute scrapping program. He holds that "the great fleet of idle ships held at bargain sale prices is a menace to legitimate merchant marine business. So long as that menace exists no private capital will go freely into shipping investments."

OAKLAND-ALAMEDA TUBE

Bids were opened March 23 at Oakland for building the proposed subway between Oakland and Alameda, California, two companies submitting tenders—the Healy-Tibbitts Construction Company, San Francisco, \$4,998,990, and Crocker & Company, \$3,379,000. A description of this subway was published in the February issue of Pacific Marine Review.



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S. S. SANTA ROSA—Sails APR. 23

From New York to Los Angeles, San
Francisco, Portland and Seattle

S. S. SANTA MALTA—Sails APR. 7
S. S. SANTA BARBARA—Sails APR. 21

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Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.
Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4 Central. Phone Elliott 6383.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger Office, 619 Second avenue.
Pacific Steamship Company, agents.
L. C. Smith Building. Phone Elliott 2068.
SAILINGS—Intercoastal.
Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

N. O. Beggs, Agent.
4421 White Building. Phone Elliott 6127.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.
Arctic Club Building.
FREIGHT ONLY.
SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane street terminal. Phone Elliott 6657.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.
Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Sailings between Los Angeles, San Francisco, Seattle, Vancouver, B. C., New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
541 South Spring street.
FREIGHT ONLY.
SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.
208 West Eighth street. Phone Main 808.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.
Every 19 days from Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
Lane Mortgage Bldg. Phone Metropolitan 6140.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.
Freight Offices: 108 West Sixth street.
SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York, Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.
Every 14 days. Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
703 Transportation Bldg. Phone Vandyke 4659.
FREIGHT ONLY.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company.

AMERICAN CABLE

With the opening of a district sales office at 160 No. La Salle street, Chicago, the American Cable Company announces the appointment of W. H. Slingluff to handle sales of the firm's Tru-lay wire rope, Tru-luc fittings and other standard wire rope products in the midwestern states. Mr. Slingluff has been active in the wire rope field for twenty-six years and is well known in both production and selling divisions of the industry.

PIER CONTRACT

Henry & McFeegn of Seattle have been awarded the contract to construct a repair and outfitting pier at the Puget Sound Navy Yard, bid \$1,187,643. Charles H. Schaar, Seattle, was awarded a contract for an extension of the torpedo warehouse, amount \$30,244, the location of the work at Keyport, Washington.

SPERRY OFFICE

H. S. Burtis, Seattle manager of the Sperry Gyroscope Company, has enlarged his quarters at 404 Central building, adding an attractive display room. The Sperry compasses were recently installed on the new steamer Princess Kathleen, serving the triangular run between Seattle, Victoria and Vancouver for the Canadian Pacific.

McCARTHY DIES

Captain Charles P. McCarthy, aged 60, veteran master mariner, died recently at his home in Seattle. He had seventeen years' service with the old Pacific Coast Steamship Co. During the past eighteen years he was with the Alaska Steamship Company, recently being master of the steamer Northwestern.

MATSON HEAD

E. D. Tenney, president of the Matson Navigation Company, arrived in San Francisco recently from Honolulu, the purpose of his trip being a conference with the main office officials of the line at this port.

SEMI-TRAILERS

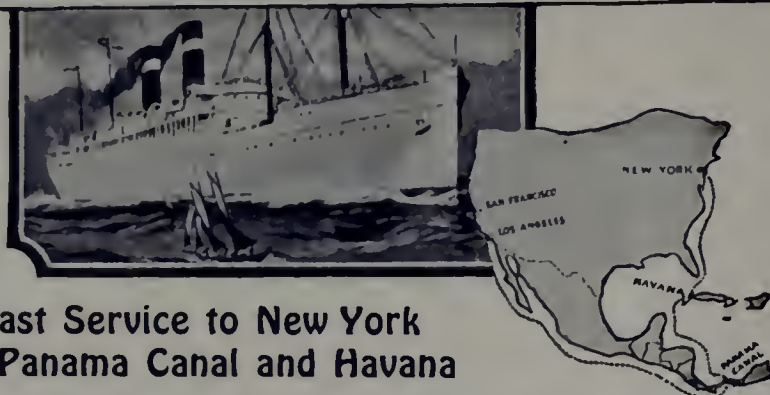
J. M. Heaton of 428 Fisk building, 1767 Broadway, New York, formerly branch manager for Greater New York, has been appointed distributor for the complete line of Lapeer semi-trailers. Mr. Heaton will have Greater New York for his territory.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

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MANCHURIA	April 2
MONGOLIA	April 16
FINLAND	April 30
MANCHURIA	May 21

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.

FINLAND	April 4	April 6
MANCHURIA	April 25	April 27
MONGOLIA	May 9	May 11

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Atlantic Transport Line to LONDON. White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

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SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
A. G. Bartlett Bldg. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.

Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.

Railway Exchange Building.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.

Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.

Yeon Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 14 days. Eastward calls: San Francisco, Los Angeles, Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland, and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

1008 Spalding Building.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Pacific Steamship Company, freight agents.

Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Halifax. Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.

402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.

Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Galveston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

Kingsley Navigation Company, Ltd.

602 Pacific Building. Phone Seymour 9506.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston (westbound) and Baltimore and San Diego, Los Angeles, San Francisco and North Pacific Coast ports.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports. San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports.

GRUNDBERG DEAD

Word received from San Salvador by W. R. Grace & Company, San Francisco, reports the death at that port of Captain F. W. Grundberg, master of the Johnson Line vessel Balboa. Captain Grundberg was ill for several days.

APPOINT AGENTS

For the purpose of stimulating freight traffic to Halifax from Pacific Coast ports, F. D. Farquhar, freight traffic manager of the Farquhar Steamship Company, arrived recently in San Francisco, following a visit to Los Angeles. This firm is interested in the transshipment business from Pacific Coast ports to Halifax via Boston. Davies, Turner & Company have been appointed San Francisco agents. Mr. Farquhar states that the offerings from Pacific Coast ports to Halifax, with transshipment on his vessels at Boston have increased to such an extent that representatives are being established at all leading Pacific Coast ports to handle the business.

BRITAIN HONORS

S. F. MASTER

Captain G. T. January of the United States Shipping Board trans-Pacific liner President Pierce has been highly honored by the British government for services rendered to the shipwrecked crew of the steamer Mary Hancock. Captain January, commanding the liner President Taft at the time, sighted the crew in the North Pacific on January 26, 1924. In spite of a storm and heavy seas the rescue was effected. For this service the British government has sent a silver salver to be presented to Captain January. Silver medals will also be awarded to F. J. Sommer, chief officer of the President Taft, and the following members of the crew: E. Laxinto, H. Sim, V. Demerin, E. Carinto, R. Valencia, A. de La Cruz and C. Fernandez. The presentation ceremonies will be held at the San Francisco offices of the United States Shipping Commission.

SERVICE EMBLEMS

Diamond service emblems have been presented by the American Manufacturing Company of Philadelphia to 32 of their employes who have been with the firm for 25 years or more. Gold emblems were presented to 275 other employes with records of 5 to 25 years' service. Heading the list of those who received diamond emblems were two machinists with records of 46 and 45 years of active service.

NORTON, LILLY & COMPANY

GENERAL AGENTS, PACIFIC COAST

ISTHMIAN STEAMSHIP LINES (Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transhipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR

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Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

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WHEN CLEAR - BURN BLUE LIGHT ON JACK AT FORECAST

ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels.)
112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CALIFORNIA ORIENT LINE

Pacific Mail Steamship Co., managing operators.

508 California street. Phone Sutter 3800.
(Operating U. S. S. B. vessels.)

PASSENGERS AND FREIGHT.

SAILINGS—Trans-Pacific Service.

Every 14 days from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—Hongkong-India (Freight Only.)
Connection at Hongkong every 2 weeks for India ports.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.

Robert Dollar Building, 311 California street.

Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Fortnightly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.

(Operating U. S. S. B. vessels.)

Sudden & Christenson, agents.

230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning via San Francisco.

OSAKA SHOSEN KAISHA

McCrone & McPherson, Agents.

503 Market street. Phone Kearny 2632.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

549-51 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

222 Robert Dollar Bldg. Phone Garfield 3899.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.

Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

American Bank Building. Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

W. C. Dawson & Company, agents.

Mutual Life Building. Phone Elliott 0842.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los An-

OAKLAND OFFICE

Charles J. Stokes, until recently with the firm of P. J. Seale & Company, San Francisco, has opened an office at the Bacon Block, Oakland, where he will conduct his own business as a cargo surveyor and appraiser. Mr. Stokes will devote his entire time to attention of East Bay district marine matters. Importance of this territory is clearly shown in the recent decisions of several important steamer lines to regularly call at Oakland.

E. K. WOOD

LUMBER COMPANY

Fred J. Wood, president of the E. K. Wood Lumber Company, announces that the plant at Bellingham, Wash., is to be completely electrified. Work is to start soon. The Bloedel-Donovan Lumber Company, Bellingham, Wash., plans to expend \$300,000 during this year in completion of electrification work in the company's cargo plant.

DIESELS AGAIN

Furness, Withy & Company are reported to have ordered five 10,000-ton motorships from a Hamburg shipyard for their New York-Asiatic trade.

HANSEN SUCCEEDS

TARPEY

Captain Chas. Hansen has been appointed port captain for the Pacific Steamship Company at San Francisco, relieving Captain Martin E. Tarpey, who became San Francisco bar pilot on April 1. Captain Hansen has been in the employ of the Pacific Steamship Company for a number of years and prior to this appointment was assistant port captain for the company at Seattle.

MONGOLIA IN

INTERCOASTAL SERVICE

The Panama-Pacific liner Mongolia arrived on the Pacific Coast during March on her first voyage in the intercoastal service of the Panama-Pacific Line and her first trip to this coast since 1915. The vessel has been entirely renovated and especially fitted for her New York-California route.

NAVAL ARCHITECTS AND MARINE SURVEYORS

Frank W. Hibbs, naval constructor; Captain Edward McCauley, naval architect, and S. Burke Smith, marine surveyor, have organized the firm of Hibbs, McCauley & Smith, San Francisco, to engage in work of ship designing and surveying.

United States Government Combination Freight and Passenger Services From Pacific Ports

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Trans Pacific Service from Seattle to
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A sailing every twelve days by one of the five great ships

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ORIENTAL

geles and San Francisco, thence to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone Broadway 7900 and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.
PASSENGERS AND FREIGHT

SAILINGS—Fortnightly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick, McPherson & Lapham, agents.
Transportation Bldg. Phone Vandike 6171.
PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.
FREIGHT ONLY.

SAILINGS—At frequent intervals from Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone TRinity 6556.
PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

PORTLAND

AMERICAN ORIENTAL SERVICE

A. M. Gillespie, Inc., agent.
Board of Trade Bldg. Phone Broadway 4348.
SAILINGS—Monthly to ports of Japan and China as inducements offer.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
702 Wilcox Building. Phone Main 4113.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)
Columbia Pacific Shipping Company.
Porter Building. Phone Bdwy. 5360.
FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning via San Francisco.

UNITED KINGDOM—CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.
Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

PORTLAND-ORIENT LINE

Wallem & Company, agents.
Porter Building. Phone Broadway 1844.
SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
Oregon-Pacific Company, agents.
203-4 Wilcox Building. Phone Bdwy. 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company.
1109 Porter Building.
FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Yorkshire Building. Phone Seymour 9576.
PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.
FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.
602 Hastings St. W. Phone Seymour 2376.
PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.
815 Hastings St., W. Phone Seymour 8014.
8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.
837 Hastings street, W. Phone Seymour 7147.
FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.
Phone Seymour 2198.
FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Co., Inc.
Merchants Exchange Building.
FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

NEW STEVEDORING FIRM, LOS ANGELES

For the purpose of handling cargoes arriving at Los Angeles Harbor, the Associated Terminals Service was recently organized at that port, with Gordon Jones in charge of the business. Gerald Fitzgerald, president of the Union Terminal Warehouse Company, Los Angeles, is said to be one of the principal organizers of the new firm.

GENERAL AT ABERDEEN

The General Steamship Company has opened an office in the Washington Hotel building, Aberdeen, Washington, and plans to make Aberdeen a port of call for freight and passenger vessels.

MAKURA REPLACES MAUNGANUI

The steamer Maunganui of the Union Steamship Company of New Zealand, which has been in service on the Australasian-San Francisco run, is now on her last voyage in this service, as on her return to Wellington she will go into the inter-island service. The steamer Makura, which has been replaced by the motor liner Aorangi on the Vancouver-Australasian route, will be transferred to the San Francisco service.

TOWING FIRMS COMBINE

The West Coast Towing Company, the Greer-Christie Company and Gilkey Brothers, all of Vancouver, British Columbia, have combined to form the International Towing Company, Ltd., with Walter Gilkey as president; F. Gilkey, managing director; J. H. Greer, vice-president, and D. H. Christie, secretary.

LUCKENBACH VISITS COAST

Edgar F. Luckenbach, president of the Luckenbach Steamship Company, visited all Pacific Coast ports during March on a tour of inspection. Mr. Luckenbach expressed himself as being greatly pleased with conditions on the coast and feels that the outlook for business for his line for the coming year is an optimistic one.

MARINE SURVEYORS

Marine surveyors from Pacific Coast ports held a four-day meeting at San Francisco, March 10 to 13. Among those who attended were Captain S. Gullinton of Vancouver; Captain S. B. Gibbs of Seattle; Captain W. C. Banks of Coos Bay; Charles Clarkson of Grays Harbor, and Banning Young of Los Angeles.

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Oceanic S. S. Co.'s sailings: Ventura, April 8; Sonoma, May 6; Ventura June 10, July 8, August 12, etc. Transshipping at Sydney to favorite Java lines to Singapore; from Singapore splendid Government built steamers of Dollar Line to Marseilles or New York. \$140 extra via Panama Canal.

Standard Service Throughout

**Honolulu, \$220 Round Trip, First Class
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23,000 Tons Dis. 20,000 Tons Dis.
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Monthly sailings from Vancouver to main New Zealand ports, also to Sydney, Melbourne and Adelaide, Australia, are maintained by the following up-to-date cargo steamers:

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VANCOUVER, B. C.

UNITED KINGDOM--CONTINENTAL EUROPE

SAILINGS—Regular service, Pacific Coast ports, direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Service between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, sub-agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

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SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

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SHIPBUILDING NOTES

(Continued from page 198)

BOAT YARDS AT SEATTLE BUSY

Vessels building on Puget Sound include an 120-foot ocean-going tug, an 83-foot diesel seagoing yacht, a 58-foot shallow draft river tug, and two cannery tenders.

The ocean-going tug is under construction in the yard of the Ballard Marine Railway Company for Young Brothers, Honolulu. L. H. Coolidge of Seattle is naval architect. She is to be twin screw with two 300 horsepower Fairbanks-Morse diesel engines.

A 75-foot cannery tender is building for the Kadiak Fisheries Company in the Martinolich yard, Dockton, to be equipped with a 100 horsepower diesel engine.

J. C. Johnson, Port Blakely, is building a 97-foot cannery tender for the Sunny Point Packing Company, which is to be equipped with a 165-horsepower engine.

Dan Lewis Towing Company, Everett, is building a 58-foot river tug to be equipped with a 100 horsepower engine.

Ballard Marine Railway is building an 83-foot diesel powered seagoing yacht for J. F. Ives, vice-president and general manager of the Stimson Mill Company. The last four vessels were designed by L. E. Geary, Seattle.

* * *

The Port Angeles Gravel & Supply Company, Port Angeles, Wash., is building a 72-foot towboat, designed by L. H. Coolidge of Seattle, and powered with a 200-horsepower Sumner semi-diesel engine.

* * *

Moore Dry Dock Company, Oakland, will make all the forgeings for the two single-acting, Werkspoor type, 2900 brake horsepower diesel engines being built by the Pacific Diesel Engine Company on contract from the Shipping Board.

* * *

L. E. Geary, naval architect of Seattle, has an order for an Alaska cannery tender for the P. E. Harris & Company, vessel to be 86 feet long and to cost around \$44,000.

* * *

The General Engineering & Drydock Company, Alameda, is overhauling the ferry steamer Yerba Buena, recently purchased by the Golden Gate Ferry Company from the Key Route Ferry Company of Oakland.



HAWAII

For the Fleet Maneuvers

Hawaii will be the scene of the annual maneuvers of the combined Atlantic and Pacific fleets this summer—for the first time in island history. The American fleet leaves San Francisco April 15 and will reach Honolulu on April 27. The maneuvers will be held during May and June, with the Army cooperating by maneuvers on land near Honolulu. In July the fleet will leave Hawaii for American Samoa, whence the battleship division and a destroyer division will sail for various Australian and New Zealand ports.

Battleships, light cruisers (of which the U. S. S. Omaha, seen above in Honolulu harbor, is one), submarines, airplanes—all will work together in making these maneuvers a success. And in addition to the navy angle, you can ride the surf at Waikiki, pay a visit to Hawaii National Park, enjoy tropical fruits and summer-flowering trees and shrubs, golf, motor, hike, in weather cooler than Southern California in midsummer. Write us for literature. Let us plan your trip to these Happy Isles. Make it a Matson Line Inclusive (All-Expense) Tour. The cost ranges from \$267 to \$381, each person, for a perfect 21-day trip.



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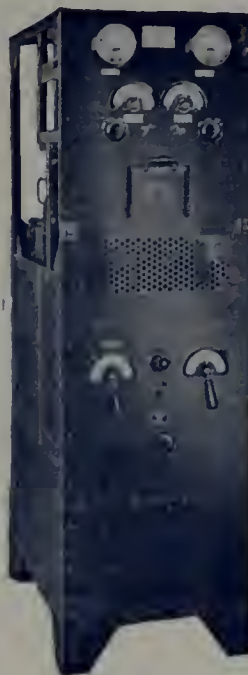
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Name

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RCA announces a new marine radio CW tube transmitter



Model ET-3626

Height 69 1/2"
Width 21"
Depth 33 1/2"

THE Radio Corporation of America announces that it is now making installations of the new model ET-3626 continuous wave radio telegraph transmitter designed especially for marine use.

This set transmits efficiently on all wave lengths used in ship-to-shore communication. It is strongly constructed of the best possible materials. Its operation is simple. A special "Break-in" system speeds up transmission and receipt of messages.

Under ordinary conditions the Model ET-3626 transmitter has a range of a thousand miles over water by daylight, and two thousand miles at night, using CW. It also transmits by means of ICW.

For further information address

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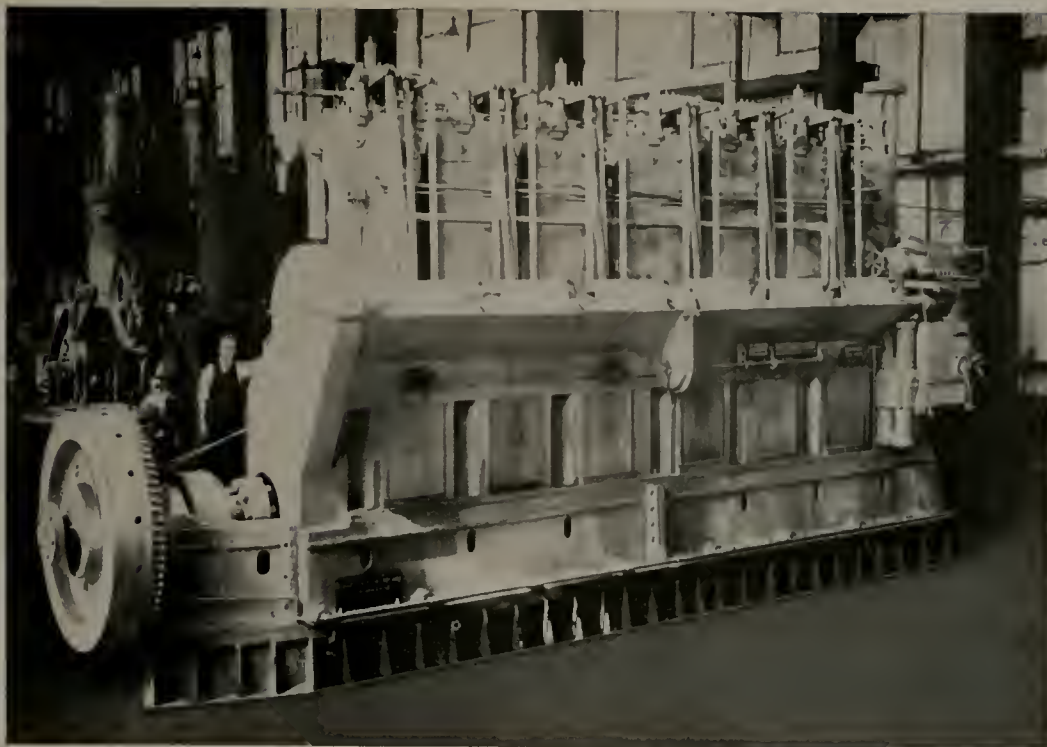
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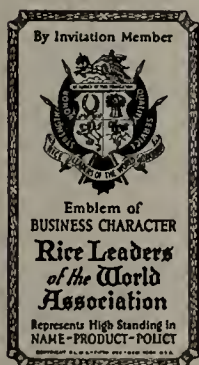
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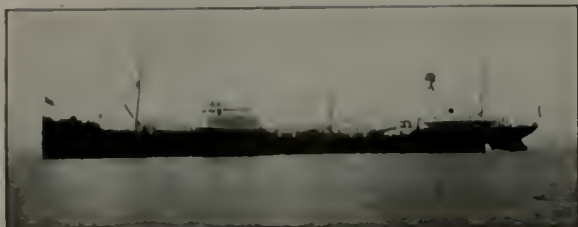
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A surprisingly small amount of space is required for the installation of these two essential nautical instruments. A complete service is rendered the purchaser. That it is highly satisfactory is evidenced by the greatly increasing number of "fleets" that are being equipped with these products of the Federal Telegraph Company, pioneers in the manufacture, operation, and sale of C-W marine radio equipment.

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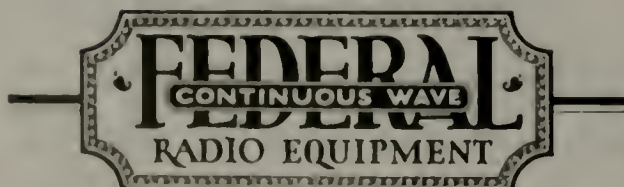


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CAVITATION AT HIGH SPEEDS

(Continued from page 171)

came less as the displacement increased until, at the deepest displacement, it had almost disappeared. There is a further peculiarity in these results, in that the Omaha, at light draught, showed less divergence than the other two cruisers; in fact, almost none. Investigation showed that there was a significant new condition of the trial in the case of the Omaha in that she was run trimmed considerably by the stern. In other words, the propellers had more submergence than those of the other two cruisers. It is, of course, evident that this submergence of the propeller increases also as the displacement of the ship is increased.

It is plain that cavitation does not fit as an explanation of the results of these trials, and another explanation must be sought. Cavitation depends only on the relative speed and direction of the stream past the propeller surfaces and is not changed appreciably by change in submergence. In this case, however, it seems that submergence was the controlling factor and not the degree of loading of the propellers. The only factor that can thus influence the performance of the propeller as its submergence is changed is the introduction of air into the propeller disc. It was noted in the early days of the design of the scout cruisers that air could be, at times, drawn down along the rear edge of the propeller struts, in the model. At the light contract draught, the upper strut palms are very near the surface when the vessel is on an even keel, and when account is taken of the stern wave and the change of trim at full speed. Considerable eddying must be set up by this strut palm and the strut below it, especially in slightly disturbed water, and there would at once be opened an air tube, which, at increasing speed, would extend farther and farther down until air was introduced into the disc. This was experimentally shown on a model in the Basin, as will be described below. The eddy increased in depth as the speed increased, and the great increase in divergence, as shown in this test, was therefore to be expected with the increase of speed. Again, if the vessel at light draught is down by the stern, this divergence would be later in appearing, and the same thing applies if the vessel is given increased draught throughout. In other words, although the actual happening in this case was directly contrary to what might be expected from cavitation, it agrees in all respects with what may be expected from the introduction of air to the propeller disc, through eddies forming behind the strut, and it is becoming the opinion of the Model Basin that cavitation in the case of the scout cruisers is absent.

This conclusion led to reconsideration of the case of the destroyers, on which case report was submitted in June, 1921. It is evident at first glance that the divergences between trial results and basin results, above what has been considered the cavitating limit, are very great. They are also very different for the different destroyers, so different, in fact, that the cavitation theory cannot cover them, and an explanation by means of cavitation therefore seems very doubtful.

In the case of the destroyer, the upper strut arm breaks the surface under all conditions, and eddies form behind the strut, finally allowing air to get down to the propeller disc. It is clear that the amount of eddying or the size of the air tube must be greater than in the case of the scouts, where the strut only approaches the surface. Furthermore, small changes in the shape of the strut section, or how it is set regarding the fore and aft line, might make consider-

able difference, and a well-formed and smooth strut might give worse results, if it is not aligned correctly, than a rough and ill-formed strut, which is placed in the proper streamline. But, generally speaking, a small difference in the bluntness of the after edge of the strut should show a considerable difference in the results.

To test this idea of the divergence being due to air being directed down abaft the propeller strut, one of the destroyer models was fitted up as before for self-propulsion, but the after edge of the strut was blunted and its thickness increased, more or less, in various experiments, up to a maximum of $5/32$ inch. When this model was run self-propelled the phenomena described above, in connection with air being drawn down through the eddy, were easily observed. As soon as a certain definite speed was reached, the eddy behind the strut would form and would go deeper and deeper as the speed was increased until it reached the propeller hub. At this point there seemed to form a continuous sheet of air between the strut and the propeller disc.

Measurements of powers and revolutions, and the corresponding prediction for full size, show, in the case of the thickest strut edge, divergences from previous results, quite similar to those shown in the trials of the vessel. The divergences were, however, considerably greater. In the case of the smaller thicknesses experimented with, these divergences were only small. It appeared that a definite size of air tube was necessary to bring down sufficient air to affect the results considerably.

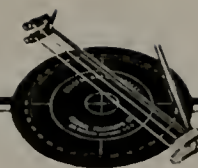
While these experiments are not conclusive, they indicate that a process of directing air down the strut is not beyond possibility, and that, in case it happens, the results are comparable to what has actually been found on trial. It seems that the matter is well worth further experiments, which must, however, be performed on full size. It might be pointed out that, in the case of the scout cruisers at deep draught, there appears to be nothing to be gained, yet in the case of the destroyers there is a difference of 3 knots, more or less, between the Model Basin predictions and the trial results, for full power, and if this difference is to be entirely ascribed to the effect of air going down the strut, it would seem that prevention of this occurrence would be well worth while. There is, however, also a possibility of air entering the propeller disc directly from the surface, over the tips. This has sometimes occurred in the Model Basin, but only at a very high slip, such as occurs when the carriage is at a standstill. In full size, this might occur more readily at lower slips, especially in rough water, and this possibility should be kept in mind.

To avoid having the air travel down the struts, in the case of the destroyers, it is evident that nothing can be done in the way of fining the strut arms. In new design, it is probable that the best results would be obtained by the suppression of the upper strut arm, increasing the lower one sufficiently to take the weight. It is considered that, in all new designs of any class of ships at high speed, this question should be given careful consideration.

Assuming that the above explanation holds, for these two classes of vessels, a new field of usefulness appears to have been opened for the Model Basin. Under such circumstances, it would appear that the Model Basin predictions for high speed vessels might be considered correct up to the highest speeds, if the strut design has been correct.

The greatest aid

to Navigation



Standard Oil Tanker J. A. MOFFETT

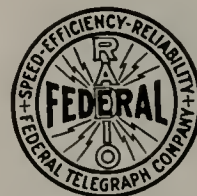
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A real test of Diesel-electric

The Van Dyke tugs have furnished more proof of the superiority of Diesel-electric drive. In recent tests with a larger direct-drive Diesel tug, the "Van Dyke No. 1" and "Van Dyke No. 2" proved more powerful



These two Diesel-electric tugs and the Van Dyke No. 3, illustrated, are all operated by the Atlantic Refining Co. In several months' operation their electric drives have performed in a manner consistent with the success of other Diesel-electric craft equipped by General Electric.

- in towing
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and when running light, the Diesel-electric tugs developed greater speed.

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The National Magazine of Shipping

MAY, 1925

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Photos by G. E. Biddell & Co., San Francisco—8-minute exposure

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Bernard N. De Roehie,
Vice-Pres. and Manager.

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SOME THOUGHTS ON AMERICAN SHIPPING POLICY

By J. E. CUSHING,

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WE have all read and heard a great deal of our shipping policy—or lack of one—these last few years. Policy is a broad word and difficult to define. To limit its scope, I am going to assume it to be the attitude of the people of the United States toward the merchant shipping under their flag as expressed in national legislation. Not the business attitude, not the shipper's attitude or that of the man on the street, but the attitude of Congress and the national administration. The question has been pretty well fogged up by too much talk. You can only put your finger on one or two fundamentals and keep it there even when you try to state facts and leave the conclusions to the future, but so few people have read, much less studied, the laws which are intended to lay the foundations of a new American merchant marine that it is worth the try.

When the Constitution was adopted, we were in great part a seafaring people. The merchants of New England and New York had a prominent voice in Congress. The first thing the national government ever did for the American merchant marine was the best thing—the one constructive thing—that was ever done for it. I refer to the coastwise laws, which reserved our domestic trade to American shipping. That, and that alone, has kept our flag afloat for the last seventy years. It was our only opportunity to apply on the ocean the principle of protection which we so successfully employed ashore. It has put us today well up on the list of maritime powers and preserved a remnant of our seafaring tradition for the time when we will need it.

I suppose it is the glamour which surrounds adventures in foreign fields as against the commonplaces of home, but it is a fact that when we look at our merchant tonnage ranked with the other merchant tonnages of the world in Lloyd's Register we discount the figures by the footnote "including Lake and Coastwise tonnage." Yet that "including" takes in some splendid passenger and freight steamers that will stand comparison with the best in the merchant fleets of England, Germany, and Japan. The men who founded our government had the happy faculty of establishing policies which worked under conditions that they could never have foreseen. They could hardly have guessed the decline of our then prosperous merchant marine, the extension of our coast line to the Pacific, the building of the Panama Canal, and the acquisition of Alaska and Hawaii. Yet the policy of protected coastwise trade could not have been better devised to

meet all these contingencies from the standpoint of our shipping interests.

Discriminating Duties

The other marine legislation of these earlier years concerned itself mainly with retaliations against the discriminatory laws of other maritime powers—Great Britain in particular. In other words, it was Section 28, with the reverse English. To those who believe that our merchant marine can best be established in the foreign trade by preferential rail rates and discriminatory duties, I recommend a perusal of our shipping history from 1800 to 1830. We matched discriminations with Great Britain until we matched ourselves into the War of 1812. In 1828 we gave it up, turned the other cheek, admitted British vessels to our ports on terms of equality with our own, and in turn two years later gained what we wanted most—admission of our vessels into the British West Indies.*

The next shipping legislation worthy of note also established a sound principle—the payment of fixed sums to American lines for the carriage of our foreign mails. While unfortunately so termed, these payments were really not subsidies, in that they required the performance of a very definite and useful service. They were not simply a gratuity from the taxpayer for staying afloat like the French bounties or our late-lamented subsidy bill. They called for the operation of steamers of a certain speed on well defined routes and regular schedules. As sometimes happens, while the principle was sound, its application was abused. There was more or less of a scandal, and in 1875 all contracts were abrogated.

Congress then substituted an act which permitted the Postoffice Department to pay more for the transport of mails by American than by foreign vessels, and ultimately in 1891 revived the principle of payments to American vessels of a certain type and speed. Several lines, notably the Oceanic Steamship Company, Ward Line, and International Mercantile Marine Company, have operated under this law, but the rates allowed have been insufficient to offset higher American costs and it has not led to any marked development or expansion.

These two definite enactments—first, the protection of American flag shipping in our domestic trade; and second, the payment of mail compensation to fast line steamers—constituted the fundamentals of our national shipping policy down to the election of Wilson in 1912.

* Vide Article on Discriminating Duties by Prof. Peter A. Crockatt elsewhere in this issue of Pacific Marine Review.

Both were sound in principle then and are sound to-day. The first must be continued; the second could well be revived and improved. But in spite of them, our merchant marine was rapidly disappearing.

It is important to remember that the causes for this had nothing to do with our national shipping policy or lack of one. They were economic. They operated naturally and no human power could have stopped them. Had we turned from protection to free trade or deliberately set for ourselves a lower standard of living, there might have been another story to tell; but even this is very very doubtful, and the game would certainly not have been worth the candle. There was too much to think about ashore.

Shipping Board

With the accession of Wilson commenced a new era. We began to discover that we had a shipping problem and needed, or thought we needed, a shipping policy. We were commencing to do more exporting. We were building the Panama Canal, and there was much talk of trade development to South America. In the rush of events that followed 1914 it is easy to lose sight of what went before, but without a knowledge of that background we can get no intelligent view of our present strange situation. Most of us have the impression that the Shipping Board was essentially a creation of the war. As a matter of fact, it was not.

Wilson's first presidency was a "reform" one. Although possibly not so hysterically, it followed the attitude toward business which had marked the Roosevelt regime. Regulation or interference—the name depends on the viewpoint—was well up on its legislative program and there was a decided leaning in some administration quarters to actual government ownership and operation. For some time past Congress had been investigating foreign steamship conferences and had unearthed the deferred rebate. A government suit against the conference under the anti-trust acts had failed. These happenings, and the Panama Canal Act, had aroused in Washington a greater interest in marine matters than had been manifested in twenty-five years.

Shipping Act of 1914

In September, 1914—a little more than thirty days after the outbreak of the war—a bill was introduced into Congress providing explicitly for government construction, ownership, and operation of merchant vessels in the foreign trade of the United States. It was too early for anyone to have realized or foreseen the unprecedented results of the British blockade and the German submarine campaigns. The bill was not a war measure. It sought to establish a totally new American shipping policy—a policy which involved an absolute departure from American fundamentals launched where it would be least observed by the general public, which was then, and still is, uninterested and largely apathetic to deepwater shipping.

This bill passed the House. It was defeated in the Senate and a substitute measure, somewhat less drastic, was also beaten—solely because the majority of the Senators were opposed to the principle of government ownership.

Meantime, the war went on. Ships were interned, commandeered, and destroyed. Services were disrupted. Freight rates began to soar. Necessity overcame principle. The proponents of the 1914 bill saw their opportunity in the existing emergency and the Shipping Act of 1916 was the result.

The preceding year the La Follette Seamen's Bill had become law. Important as some of the provisions

of this act are, it is not essentially a part of our shipping policy. Its effects under its actual workings have not proved as serious as was feared at the time of its passage, and while it adds one more to the legislative hindrances under which our merchant marine labors, it is not in itself a vital factor.

Shipping Act 1916

The Act of 1916 was a horse of another color. It combined government ownership with an emasculated but potential regulation, and camouflaged its whole purpose with the brilliant pattern of a crying emergency. Called by whatever name you will, it was out and out state socialism—the most direct departure in the history of the United States from the principles on which our government was founded. If state-owned shipping, why not state-owned railroads, or packing houses, or canneries, or mines, or lumber mills? In fact the staunchest supporter of the bill in the administration was the man who two years later gave this country its object lesson in government operation of railroads. If the bill had been inspired by the then rampant German propaganda, it could not more effectively have put a damper on American shipping.

It is not my purpose to trace in detail the shifting history of the Shipping Board. It came into being almost as we entered the war, and the commercial aspects of its creation and existence were immediately obliterated by the insistent call for ships. In spite of its many critics, its war record was a splendid one. Unfortunately, like Napoleon or the Kaiser, it did not perish on the field of battle. It is what the Shipping Board stands for and not the Board itself that is important.

The Shipping Board

In the performance of its wartime duty, the Shipping Board put forth a vast amount of propaganda—all of it serving a legitimate and useful purpose—which created a brief revival of interest on the part of the public in an American merchant marine. Now our war-time activities were not bent toward making a merchant marine but to the building of ships for wartime purposes. It is true that you cannot have a merchant marine without ships, but you can certainly have ships without a merchant marine. With the armistice we quit making munitions, cannon, cantonments, and stores, and sold our surplus for what it would bring, but we cheerfully kept on building ships, until by 1920 we had accumulated twelve hundred odd, which were really nothing more than surplus war material surrounded by a halo of picturesque propaganda.

While all this was going on the Democratic administration had acquired a hostile Congress. The country had chewed experimentally on government operation of railroads and found that it did not taste as sweet as it looked. The Act of 1916 was still in force with its mandate to government ownership. The President was busy in Paris. The Board did not know what to do, so it wisely did nothing and waited for Congress. Freight rates were high, there were enormous profits, on paper, in carrying relief supplies, and the Army was coming home from France, so that the ships were busy, and the country at large had plenty to think about beside its shipping problems.

Along with the high freight rates went high tonnage prices. If we had liquidated our wartime surplus of ships then, as Great Britain did, the returns to the taxpayers would have made a very respectable showing and the subsequent savings would have been more respectable yet. We did not liquidate, and it is difficult to see how we could have done it. If the Ship-

ping Board sold on a liquidating basis, they turned their backs on the government ownership theory of the Act of 1916. Where were they if a hostile Congress declared for the continuation of that policy? It was hardly conceivable, but it might happen. Worse, because more likely, if the Shipping Board sold on a liquidating basis, it would have to sell below the world's market price, and to make a clean sweep it would undoubtedly have to sell abroad. Where were they if they did these things with a hostile Congress and a presidential election in the offing?

The Middle Course

Meantime, the ships had to be operated, and in their operation the Board steered or drifted into a middle course. They might have chartered some of their ships to private American companies at rates which would have relieved a part of the burden on the taxpayers and forced the risk of the venture on the charterers. But obviously no private interest would take the risk of charter if it was called upon to run in competition with government-operated tonnage where the risk was carried by the Treasury. They might have organized for direct operation following out the principles of the Act of 1916. But how could they be sure of the appropriations for the necessary organization from a Congress hostile to the administration which was already plunging greefully into some very partisan investigations of the Shipping Board's affairs? So they turned to a middle course, put a price on the ships that they were sure no one would pay, and placed them for operation in the hands of old-established or new-born private shipping companies to operate under a commission agreement, with the shipping companies sure of their fees whether the ship made money or lost it.

Merchant Marine Act 1920

The Merchant Marine Act of 1920 was the first Republican struggle with the buck passed by the Democratic Shipping Board. Its preamble declared definitely and eloquently for a privately-owned merchant marine. Its provisions failed utterly to establish any adequate means for carrying out the declaration. The Shipping Board was solemnly enjoined to sell its ships and get out of business, but the time, the place, and the method were left to the Board itself. It was told to commit suicide whenever it was ready. Meantime government operation was to continue in whatever manner the Shipping Board found most feasible, and the problem of establishing private ownership side by side with government competition was left on the doorstep of the future just where it had been found, and just where, four years later, it still remains.

The regulatory powers of the 1916 Act were continued if anything in slightly vaguer terms. Presumably because misery loves company, the Shipping Board was increased from five to seven members, with a geographical and consequently more political selection. Two sections sincerely designed to build up traffic for American ships by preferential rail rates and discriminating duties were incorporated. Unfortunately, their helpfulness was somewhat impaired because they were based on the theory that if you hit a man on the nose he will not hit back. Three Presidents have preferred to avoid this interesting experiment and the sections remain unenforced.

Fear of Competition

It is the spirit expressed in these sections which unfortunately pervades much of our national attitude toward shipping. Undoubtedly in world trade our competition is more experienced and better equipped than we. We will need all of our brains and aggressive-

ness to meet it, but this does not necessarily mean that we should start out by carrying chips on both shoulders and inviting our competitors to knock them off. With some of our competitors—in fact, with most of them—their shipping is a matter of national existence. They cannot be blamed if they remember that self-preservation is the first law of nature.

This rather hysterical fear of our friends, the enemy, manifests itself in a curious way elsewhere in the law. An American owner cannot sell a steamer except to another American without first obtaining the permission of the Shipping Board. To get that permission he has practically to certify that the ship is worthless, thus notifying the prospective buyer that he is throwing away his money when he buys. Most of the great commercial fleets which Great Britain has so successfully built up have been developed on the eminently sensible policy of selling obsolete tonnage to whomever will buy and replacing it with modern vessels. Yet the American owner is practically prevented by statute from maintaining his fleet at a corresponding high standard. We can export and are encouraged to export everything that goes into a ship. We cannot export the ship itself.

Deferred Rebates

Probably as another reaction to this same fear of foreign devices, both acts, while permitting conference agreements, turn in holy horror from the only practical means of making conference agreements workable—the deferred rebate. The word "rebate" has always been anathema to American legislative bodies, and possibly with reason. Yet there is nothing either immoral or discriminatory in the deferred rebate. From the standpoint of both shipper and carrier, there is much that is constructively good. The return is open to any shipper, large or small, in proportion to his tonnage. It gives him stable rates, with frequent and regular service, while it insures to the lines who must bear the expense of providing this service a measure of protection against occasional tramp competition. It is the foundation on which most of the foreign conference services are built. Foreign legislative bodies have repeatedly investigated and sanctioned it. Curiously enough, the Act of 1920 requires foreigners to admit an American line on equal terms to their conferences, and in almost the same breath forbids the American line to comply with those terms.

I have touched briefly on the regulatory features of the two acts. Thus far the Shipping Board has been too busy as an operator to do much regulating. It is hard to forecast what will happen if it does. There are certain features concerned with transportation by water which differ fundamentally from the same function on land. No way has yet been found to condemn or preempt rights of way on the ocean. Private investment in ocean terminals is fast disappearing before state ownership and control. Without any fixed investment except in herself, a ship can go pretty much where she pleases. If things on one route become too binding, she can seek another, and, failing that, the harbors of the world today bear striking witness to her last refuge—laying up.

The Tramp a Regulator

The tramp ship is a very real thing. You might in some measure, and not very effectively, regulate a line operation. You could never regulate a tramp. Yet the tramp herself is a better regulator of the line than any commission yet devised, and there are plenty of

(Continued on page 250)

THE GREATEST NAVY IN THE BEST HARBOR

ON Sunday morning, April 5, the active battle fleet of the United States, comprising some ninety-six vessels of various types, steamed through the Golden Gate and took their assigned anchorage on Man-of-War row. It has often been stated that the combined fleets of the navies of the world could easily find safe anchorage in San Francisco harbor without disturbing the regular commerce of the Bay. Certain it is that this great fleet of our own Navy cause no crowding.

San Francisco and the East Bay cities had been preparing to receive these visitors for many weeks before their arrival. The advent of 35,000 men in 96 floating towns and villages is a large order to absorb, if unprepared, but a very profitable and enjoyable experience to those who "know how."

The Citizens' Committee for entertainment of the fleet was carefully selected and well organized, as shown by the following list of names covering the general officers, the finance, and the executive committees:

Officials—James D. Phelan, chairman, Colbert Coldwell, William P. Stanton, Mrs. D. E. F. Easton, and J. C. Rohlfs, vice-chairmen; Edward Rainey, secretary; and Theodore Hardee, executive secretary.

Finance Committee—George Tourny, chairman, Robert I. Bentley, Wigginton E. Creed, W. W. Crocker, John S. Drum, and Milton H. Esberg.

Executive Committee—Charles W. Fay, chairman, Frank B. Anderson, James A. Bacigalupi, Sidney Ballou, Henry Boyen, William R. Burkhart, George T. Cameron, Captain C. W. Cole, Colonel A. W. Crawford, Hilary W. Crawford, and D. G. Davis, Philip J. Fay, Mortimer Fleishhacker, Rear Admiral C. A. Gove, Morgan A. Gunst, R. B. Hale, Mrs. W. B. Hamilton, J. Emmet Hayden, Timothy Healy, George Hearst, William F. Humphrey, Albert Jannopoulos, Charles H. Ken-

drick, Frederick J. Koster, Robert Newton Lynch, Halsey E. Manwaring, John H. McCallum, Henry L. Mayer, John A. McGregor, Dr. Howard M. McKinley, Major General Charles T. Menoher, H. Clay Miller, Captain J. M. Moore, Major General Wendell C. Neville, John Francis Neylan, Daniel J. O'Brien, Victor F. Palmer, Ralph Pincus, R. P. Prentys, Thomas P. Robinson, Chester W. Rosekrans, John H. Rosseter, Angelo J. Rossi, Paul Shoup, Charles H. Spear, Charles S. Stanton, Mrs. Jesse H. Steinhart, Mrs. G. H. Taubles, Cornelius Vanderbilt, Jr., and Randolph V. Whiting.

This ten-day stay demonstrated to the Navy Department San Francisco's ability as a supply center for needs of the fleet, and demonstrated very forcibly to San Francisco merchants the magnitude of the Navy market. From a very wide range of supply houses we are hearing today the answer to commercial demands. "No, you will have to wait a few days, the Navy cleaned us out on those spare parts."

These 35,000 men of the sea have good appetites. They consume each day almost a quarter of a million pounds of food, costing over seventeen thousand dollars a day, or approximately six and a quarter millions of dollars a year. When there is added to that the business of men's clothing, men's furnishings, engine room equipment and supplies, galley equipment, ordnance equipment and ammunition, spending money ashore, launch business visiting fleet, and many other angles, it will be seen that commercially the United States Navy looms large on the horizon of Pacific Coast business men.

The committee on aquatics and outdoor sports was especially active under the chairmanship of J. C. Rohlfs, manager of the Marine Department of the Standard Oil Company (Calif.). Mr. Rohlfs was chosen for this committee because of his well-known interest in various athletic sports. During his high school and college days Mr. Rohlfs attained considerable prominence in track and field events, baseball, football, and hockey, and frequently represented his alma mater in swimming contests. In later years he became greatly interested in tennis, and for a number of years was amateur champion of the San Francisco Bay region in that sport. This committee consisted of J. C. Rohlfs, chairman, Phil J. Fay, Colonel Thos. R. Robinson, Frank J. Foran, Herbert Fleishhacker, William Sproule, Dr. Charles H. Strub, John H. McCallum, and Lieutenant Commander E. J. Foy.

San Francisco has enjoyed her duties as hostess. Her best wishes go with the fleet and she asks every officer and every enlisted man to remember that the latch string of the Golden Gate will always be out when they approach its portals.



Citizens' committee of San Francisco welcoming the U. S. Navy to San Francisco Bay, April 5, 1925. Left to right: J. C. Rohlfs, John J. Hayes, Mayor James Rolph, Jr., Judge Sidney Ballou, Congresswoman Florence Kahn, Charles W. Fay, Admiral Robt. E. Coontz, Supervisor Angelo Rossi, Hon. James D. Phelan, Maj. Chas. H. Kendrick, Supervisor J. Emmett Hayden, Senator Key Pittman.

AMERICAN SHIPOWNERS' CONFERENCE

DURING the week beginning April 26, as we go to press, there is being held in New York a very important conference to consider the problems confronting American shipowners "in the conduct and furtherance of the shipping industry, and particularly in connection with the continued operations of the Shipping Board."

The call for this conference was issued by Alfred Gilbert Smith, president of the American Steamship Owners' Association, under the instructions of the executive committee of that Association.

A strong delegation from the Pacific Coast is attending these meetings to represent the Pacific American Steamship Owners' Association. This delegation includes: J. C. Rohlfs of the Standard Oil Company (California); H. F. Alexander of the Pacific Steamship Company; Stanley Dollar of the Dollar Steamship Line; Hugh Gallagher of the Admiral Line; J. E. Cushing of the American-Hawaiian Steamship Company; L. C. Stewart and Ralph Meyers representing Pacific Coast Shipowners' Association.

A very good outline of the purposes and aims of the conference is given in the call sent out by President Smith, as follows:

"Nearly five years have passed since the enactment of the Merchant Marine Act, 1920, and despite its provisions satisfactory progress has not been made in the development of a privately owned merchant marine in foreign trade and the retirement of the government from the shipping business.

"The causes for this condition are many. The new Administration, however, has indicated its desire to see the government out of the shipping business at the earliest practicable moment. As the problem of its retirement is a business one and not political, those in governmental authority have the right to expect from those engaged in the business practical suggestions as to the means by which this can ultimately be accomplished. Inasmuch as the Association comprises among its membership substantially all of the principal shipping interests of the country, obviously the responsibility of formulating a workable plan rests upon the Association. This responsibility must be met if government ownership and operation for a long time to come, during which hope of private ownership may be destroyed, are to be avoided. But it can only be done by each member contributing his share of effort and experience to the working out of such a plan. That a solution exists, there is no doubt; and once it is clearly defined, whatever may be its terms and conditions, and placed before governmental authorities, the responsibility will be on the Administration to make the plan



J. C. Rohlfs, manager Marine Department Standard Oil Company of California and chairman Pacific Coast Delegation to American Shipowners' Conference.

effective, if a private ownership is to be fostered.

"The members of the Association are engaged in one of the most important phases of American business. Ramifications of the shipping business reach into every port on the Atlantic, Gulf and Pacific coasts, not to mention the inland sections of the country. The Association should be the "spokesman" for the American shipping world; its recommendation as to the best methods of promoting maritime commerce should be received with respect and regarded as authoritative. Leadership in American maritime affairs should be with the Association, and when it takes a position with candor and due consideration on matters maritime, the Association should have solidly behind it the power and influence of the maritime States. The welfare of those States is intimately affected by the prosperity of the shipping business, and any measure which promotes shipping is in their interest. The Senators and Representatives of the coastal States should, therefore, support the proposals put forth by the As-

sociation for the promotion of American shipping.

"Does the Association enjoy the position of leadership to which it is entitled? If not, why not? And what is to be done to give it such place?

"This conference will be opened by a meeting and dinner at the Waldorf Astoria, on Monday, April 27, at 7 p. m., to which you are cordially invited. Sessions of the conference will be continued at the hotel on Tuesday and the following days of the week, so long as may be required to complete the important business in hand. It is proposed that sub-committees be appointed, and that reports from these be promptly secured so that a comprehensive, as well as definite, plan of recommendations may be adopted before the conference closes."

The Chamber of Commerce of the United States is also calling a conference of all American interests affected by government operation of ships with the purpose of working out a plan to get the government out of the shipping business. The results of both of these conferences will probably be coordinated to form a guide for Congress in working out ways and means for disposing of the government fleet and winding up the affairs of the Shipping Board and the Emergency Fleet Corporation, so far as active operation of mercantile marine is concerned.

The day when this is an accomplished fact will be the greatest day in the history of the American merchant marine.

TRADE AND TRAFFIC TRENDS

Department Devoted to the Interests of Exporters, Importers, and All Ocean Shippers

PACIFIC COAST FORGING AHEAD

Great Gains in Foreign Trade Valuation and Tonnage Show Trend of World Development

THE maps and tables on this and the facing page tell a very convincing graphical story outlining in a broad, comprehensive manner the shifting geographical distribution of American overseas foreign trade during the past six years.

The year 1919 touched a high-water mark in the foreign trade valuation for the United States as a

Foreign trade of the United States

[In thousands of net tons]

Year	With North America		With overseas continents	
	Entrances	Clearances	Entrances	Clearances
1904 ¹	8,453	9,270	13,351	16,775
1914 ¹	17,815	20,249	20,140	24,734
1922.....	27,512	21,443	21,885	27,065
1923.....	25,453	22,499	23,532	29,413

¹ Fiscal year.

Entrances and clearances with cargo in American foreign trade

[In thousands of net tons]

Year	Entrances	Clearances	Total
1904 ¹	21,801	26,045	47,846
1914 ¹	37,955	44,983	82,938
1922.....	49,397	48,478	97,875
1923.....	48,985	51,912	100,897

¹ Fiscal year.

Trade of the United States with Europe

[In thousands of net tons]

Year	Entries	Clearances	Total
1904 ¹	11,050	14,064	25,114
1914 ¹	15,642	19,986	35,628
1922.....	15,914	20,112	36,026
1923.....	16,716	20,946	37,662

¹ Fiscal year.

Trade of the United States with Asia, Africa, Australia, and Oceania

[In thousands of net tons]

Year	Entrances	Clearances	Total
1904 ¹	1,362	1,670	3,032
1914 ¹	2,552	2,566	4,918
1922.....	3,676	4,974	8,650
1923.....	3,980	5,940	9,920

¹ Fiscal year.

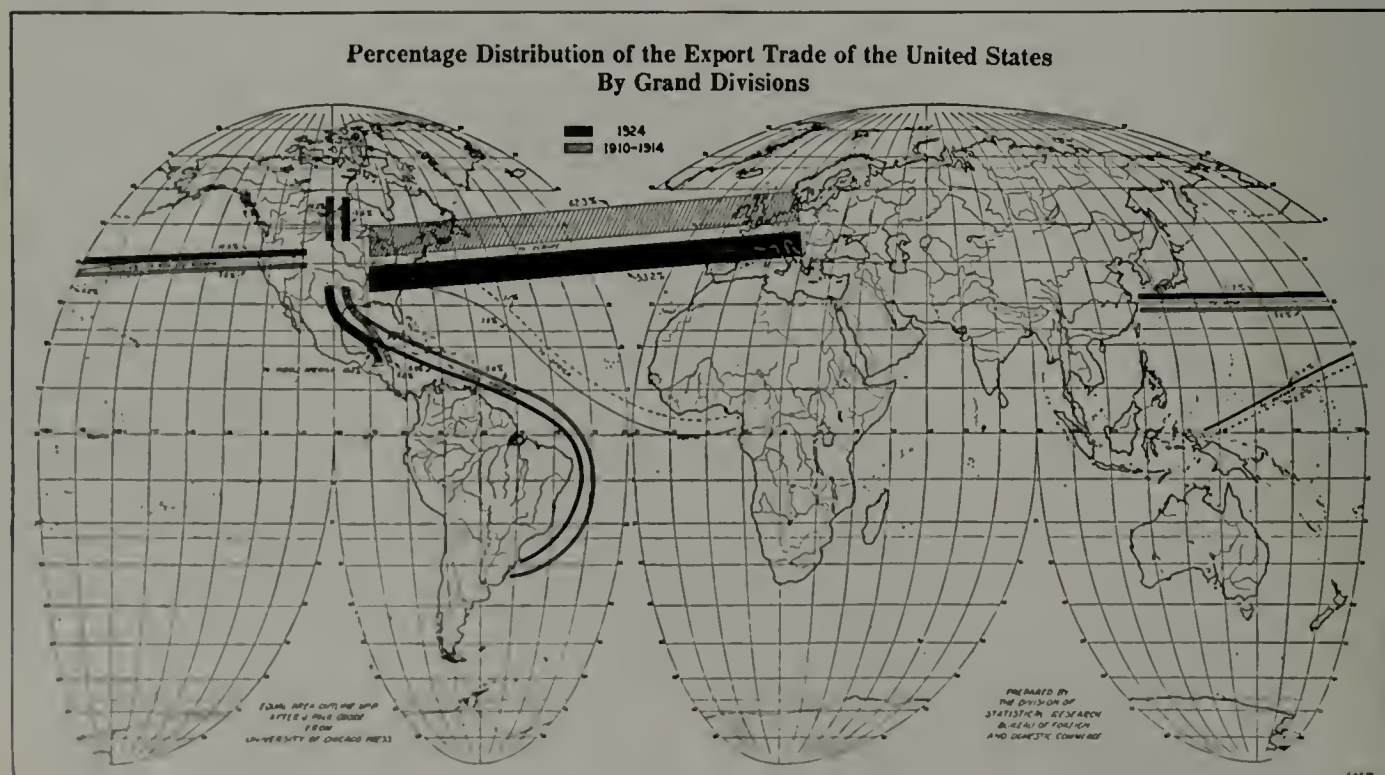
Trade of the United States with South America

[In thousands of net tons]

Year	Entrances	Clearances	Total
1904 ¹	939	1,041	1,980
1914 ¹	1,646	2,382	4,328
1922.....	2,295	1,979	4,274
1923.....	2,836	2,527	5,363

¹ Fiscal year.

**Percentage Distribution of the Export Trade of the United States
By Grand Divisions**



whole. The succeeding two years witnessed a great slump, the last three years have been years of real reconstruction, building upon normal lines toward the substantial pre-war basis.

The figures for valuation of the overseas trade of Pacific Coast ports did not experience, in 1920, so large a slump as the total figures show, and at the same time Pacific Coast ports demonstrated a remarkably rapid recovery. Since 1920 there has been a steady increase in the foreign trade valuation of the Pacific Coast, and in the percentage of that valuation to the valuation of the nation's total foreign trade.

That the eyes of the shipping world are on this development is proved by the constant increase of entrances and clearances and by the additions to the fleets of regular lines.

Many of the wisest heads in the shipping game have been predicting for years that the Pacific would soon be as busy in its traffic lanes as the Atlantic, and now we are beginning to see that fulfillment of those predictions.

Captain Robert Dollar, already well past the allotted "four score years," looks forward confidently to seeing this condition realized in his time, and he is backing this confidence with huge investment and thorough organization.

During the past five years the Pacific Coast has doubled its percentage of the nation's foreign trade.

If during the next two half-decades we repeat that performance we will be up to the Atlantic Coast.

We have the resources.

We are fast getting the population.

Brains and initiative have always been here in large measure to meet any emergency.

Why not set some real goals in Pacific foreign trade achievement and measure up to our opportunity?

The conferences now being held at Washington and New York will undoubtedly work out a practical plan for the future conduct of America's overseas merchant marine. If such a plan is forthcoming and is adopt-

THE PACIFIC COAST'S SHARE IN THE NATION'S FOREIGN TRADE
These Tables, prepared by the Bureau of News of the Mercantile Trust Company of California from official reports of the Department of Commerce, show statistically the trend of American export and import trade since the end of the war.

	Imports	Exports	Total Trade
1919	\$3,904,364,932	\$7,920,425,999	\$11,824,790,922
1920	5,278,481,490	8,228,016,307	13,506,497,797
1921	2,509,147,570	4,485,031,356	6,994,178,926
1922	3,112,746,833	3,831,777,469	6,944,524,294
1923	3,792,065,963	4,167,493,080	7,959,559,043
1924	3,610,552,566	4,590,981,958	8,201,534,524

	Imports	Per Cent	Exports	Per Cent	Total Trade	Per Cent
1919	\$463,137,480	11.87	\$598,999,967	7.56	\$1,062,137,447	8.98
1920	391,487,867	7.42	\$11,232,618	6.21	902,720,485	6.68
1921	190,308,010	7.59	311,605,311	6.95	501,913,321	7.17
1922	430,152,329	13.82	312,357,207	8.15	742,509,536	10.69
1923	480,678,745	12.67	371,572,441	8.92	852,251,186	10.70
1924	477,695,879	13.23	447,322,460	9.74	925,018,339	11.27

THE FOREIGN TRADE OF CALIFORNIA, OREGON, AND WASHINGTON, BY STATES, AND THE PERCENTAGE OF EACH IN THE NATION'S TOTAL TRADE, 1919 TO 1924

	Imports	Per Cent	Exports	Per Cent	Total Trade	Per Cent
1919	\$253,636,671	6.50	\$256,454,243	3.24	\$510,090,914	4.31
1920	235,396,255	4.46	251,925,970	3.06	487,322,225	3.60
1921	116,813,144	4.65	150,294,449	3.36	267,107,593	3.82
1922	195,756,178	6.29	168,651,421	4.41	364,407,599	5.24
1923	199,201,234	5.45	200,067,162	4.80	399,268,396	5.01
1924	187,320,234	5.18	246,930,158	5.37	434,250,392	5.29

	Imports	Per Cent	Exports	Per Cent	Total Trade	Per Cent
1919	\$195,918,779	5.02	\$292,274,345	3.69	\$488,193,124	4.13
1920	134,078,541	2.54	192,879,940	2.34	326,958,481	2.42
1921	58,530,220	2.30	90,326,976	2.01	148,857,196	2.12
1922	218,219,483	7.01	90,071,040	2.35	308,290,523	4.43
1923	262,158,105	6.91	116,088,228	2.79	378,246,333	4.75
1924	270,285,569	7.48	134,760,014	2.93	405,045,583	4.40

	Imports	Per Cent	Exports	Per Cent	Total Trade	Per Cent
1919	\$3,151,964	.08	\$44,458,227	.56	\$47,610,191	.40
1920	8,216,363	.16	61,431,974	.75	69,648,337	.51
1921	4,499,878	.19	68,188,361	1.52	72,688,239	1.03
1922	7,808,828	.25	51,005,988	1.33	58,814,816	.84
1923	10,120,136	.27	52,510,114	1.26	62,630,250	.78
1924	10,676,235	.29	62,684,997	1.36	73,361,232	.82

PERCENTAGE OF TOTAL EXPORT, IMPORT, AND COMBINED EXPORT AND IMPORT TRADE OF PACIFIC AMERICAN PORTS—MAINLAND, ALASKA, AND HAWAII—THROUGH CALIFORNIA, WASHINGTON, AND OREGON, 1919 TO 1924

IMPORTS			EXPORTS			TOTAL TRADE		
California	Washington	Oregon	California	Washington	Oregon	California	Washington	Oregon
1919 .. 54.76	42.30	.68	1919 .. 42.81	48.79	7.42	1919 .. 48.02	45.96	4.48
1920 .. 60.12	34.24	2.10	1920 .. 49.27	37.72	12.01	1920 .. 53.98	36.22	7.71
1921 .. 61.38	30.75	2.36	1921 .. 48.23	28.98	21.88	1921 .. 53.21	29.65	14.43
1922 .. 45.51	50.73	1.81	1922 .. 53.99	28.83	16.33	1922 .. 49.07	41.52	7.92
1923 .. 41.44	54.53	2.08	1923 .. 53.84	31.24	14.13	1923 .. 46.84	44.39	7.34
1924 .. 39.21	56.58	2.23	1924 .. 55.20	30.12	14.01	1924 .. 46.94	43.78	7.93

TABLE No. 1, SHOWING FOREIGN TRADE TONNAGE OF PACIFIC COAST STATES IN THE FISCAL YEARS 1923-1924

	Total Trade		Imports		Exports	
	1923	1924	1923	1924	1923	1924
California	5,565,212	6,942,797	1,459,103	1,475,742	4,106,109	5,467,055
Oregon	1,180,128	1,909,085	102,987	120,590	1,077,141	1,788,495
Washington	2,154,051	3,210,690	775,117	962,649	1,378,934	2,248,041
Pacific Coast	8,899,391	12,062,572	2,337,207	2,558,981	6,562,184	9,503,591

TABLE No. 2, SHOWING INCREASE OF CARGO TONNAGE, BY STATES, OF THE THREE PACIFIC COAST STATES

	1923	1924	Increase	Percentage of Increase
Exports and Imports	5,565,212	6,942,797	1,377,585	24.7
Imports ..	1,459,103	1,475,742	16,639	1.1
Exports ..	4,106,109	5,467,055	1,360,946	33.1

	1923	1924	Increase	Percentage of Increase
Exports and Imports	1,180,128	1,909,085	728,957	61.7
Imports	102,987	120,590	17,603	17.0
Exports ..	1,077,141	1,788,495	711,354	66.0

	1923	1924	Increase	Percentage of Increase
Exports and Imports	2,154,051	3,210,690	1,056,629	49.0
Imports ..	775,117	962,649	187,532	24.1
Exports ..	1,378,934	2,248,041	869,107	63.0

ed by Congress, capital will be more free to enter foreign trade shipping. With this condition it will be possible for the shipping man of the Pacific Coast to go forward heartily in the development of foreign mar-

kets for Pacific Coast products and to turn in an even better record for achievement during the next ten years than has already been accomplished in the past decade.

BABCOCK & WILCOX MARINE BOILERS

IN 1889 Stephen Wilcox, of Babcock & Wilcox, designed the first marine type water tube boiler and installed it in the yacht *Reverie*. This design, subsequently improved by the late William D. Hoxie, has had a very phenomenal success in naval vessels and in the merchant marine of every maritime country in the world. This success is due to:

- 1—Low first cost.
- 2—High efficiency.
- 3—Low maintenance cost.
- 4—Low weight.
- 5—Small space requirements.
- 6—Simplicity and effectiveness of design.
- 7—Free and quick steaming qualities.
- 8—Accessibility of all parts for inspection, cleaning and repairs.
- 9—Forged steel construction of all pressure parts.
- 10—No stayed surfaces, eliminating shut downs and cost of repairs.
- 11—Straight tubes with expanded joints.
- 12—Stability of manufacturer.
- 13—Engineering services rendered by manufacturer and its agents.
- 14—Service departments maintained at all important ports in United States.

The Babcock & Wilcox Company have carried on continuously a high type of research work, resulting in a constant perfecting of detail parts of this boiler and of its adaptation to the various fuels available for local use. Thus we see the name "Babcock & Wilcox" standing sponsor for one of the finest type marine oil burners and for many of the very best accessories and auxiliaries in connection with marine boiler practice.

All of this research in connection with the use of the various materials that enter into the construction of the boiler and into the design of the details has enabled the Babcock & Wilcox Company to furnish boilers to merchant steamers which have established a very high reputation for reliability in continuous service.

A recent endorsement of this boiler is its installation in the re-engined steamship *City of Los Angeles*, accomplished under the supervision of Pillsbury & Curtis. From a Scotch boiler reciprocating steam plant the entire motive power of the vessel was changed to a Babcock & Wilcox water tube boiler steam turbine plant, and has now been in operation steadily for over a year, giving absolutely reliable schedule between the ports of Los Angeles and of Hawaii. As the result of installing this new power plant the steamer *City of Los Angeles* makes 16½ knots an hour instead of 14 knots and this greater speed is made with a 25 per cent reduction in fuel consumption.

There are over one hundred and twenty-five (125) marine installations of Babcock & Wilcox water tube boilers on the Pacific Coast and in Pacific Ocean vessels and without exception these installations have given very satisfactory service.

Undoubtedly much of the credit of this service is due to Chas. C. Moore & Co. engineers, the Pacific Coast representatives of the Babcock & Wilcox Company. The supervision of installations by the expert engineers in the service of Chas. C. Moore & Co. engineers and the Babcock & Wilcox Company, at Los Angeles, Seattle, Portland, and San Francisco often results in a very much higher over-all efficiency of steam plant. The organizations maintained by these companies have had long experience in Pacific Coast conditions, both in marine and in industrial fields. They have learned from experience the best methods of handling the apparatus for the most economical consumption of Pacific Coast fuel oil and they are at all times ready to give users of Babcock & Wilcox apparatus the benefit of their experience.

There can be no doubt but what on modern high pressure steam turbine jobs the Babcock & Wilcox water tube boiler provides the best economy in steam generation consistent with reliable continuous performance at sea.

MARINE ENGINEER HONORED

SIR ALFRED F. YARROW, 83 years young, a British marine engineer and shipbuilder of international fame, made his first visit to San Francisco during April, 1925. It is hard to conceive how such virility as is evidenced by Sir Alfred could be retained over so long a period in any other climate than that of California, and we can only conclude that he is the demonstrating exception.

On Wednesday, April 22, Sir Alfred and his son, Norman A. Yarrow, were guests of honor at a luncheon given by the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast in one of the private rooms of the San Francisco Commercial Club. Captain Robert Dollar presided. At his right, the guests were Sir Alfred F. Yarrow, Andrew B. Hammond of the Hammond Lumber Company; W. W. Marriner, general manager, Yarrow, Ltd., Scotstoun, Scotland; Captain C. W. Saunders of the Matson Navigation Company; John P. Williams, executive secretary of the Pacific American Steamship Association; Hugh Gallagher of the Admiral Lane. On Captain Dollar's left sat J. J. Tynan

of the Bethlehem Shipbuilding Corporation, Ltd.; R. Bach of the Union Steamship Company; Joseph Moore of the Moore Dry Dock Company; Norman A. Yarrow of Yarrow, Ltd., Victoria, B. C.; J. C. Rohlf of the Standard Oil Company (Calif.); Captain W. J. Munro of the Panama-Pacific liner *Manchuria*; J. S. Hines of Pacific Marine Review, and Lloyd Swayne of Swayne and Hoyt, Inc.

Captain Robert Dollar introduced Sir Alfred Yarrow with a few well-chosen remarks about English speaking peoples getting together to control the balance of the world and bring about peace and harmony.

Sir Alfred spoke of his pleasure at noting the great prosperity evident in California's cities and countryside. He said that 83 years was a long time, but he was still going strong, under full head of steam and still using the original tubes, which was a great advertisement for the reliability under strenuous service of the Yarrow boiler. He, however, thought that the diesel, and particularly the diesel-electric, drive would gradually supersede steam in marine power plants.

THE AMERICAN FOREIGN SHIPPING SITUATION

Prominent Industrial Executive Advises the Propeller Club of New York City on Certain Shipping Problems Facing America's Foreign Traders

By G. E. TRIPP,

Chairman, Westinghouse Electric & Manufacturing Company

I ADVISE the Propeller Club to investigate the efficiency of the program committee. I do not believe it to be a possibility that the shrinkage of available speakers upon maritime affairs has yet reached me.

Your committee is either taking its duties with considerable complacency or it has canvassed the entire list down to smugglers, and even then I lack qualifications because I am neither a woman nor a bootlegger; I am only a trout fisherman.

I apologize for my reference to women but not unreservedly because, notwithstanding they are natural born smugglers, they are actuated by a clearly defined principle; that is to say, whether or not they are conscious of it, they are free traders. Therefore, if you will appeal to and educate the woman vote, the American merchant marine may yet prosper, no matter what happens to the rest of us.

The rest of us want a merchant marine, but we demur at free trade and for what appears to us good and sufficient reasons.

Nevertheless, realizing that our prosperity is to a degree the cause of the decline of your business during the last two generations, we should like to be helpful within the limits of our own self-interest.

You say that it costs you more than it does foreigners to construct and operate ships, and I for one would be ashamed to dispute the statement because it costs my company more to make and sell its goods than it does our foreign competitors and I like to think that we are efficient and prudent. However, our troubles in this respect resolve themselves into a profit while your troubles resolve themselves into a loss, notwithstanding they both stand upon the same foundation, that is to say upon our protective tariff system.

If you have any doubt about this, I invite you to come back with me to the period just before the Civil War when, as Mr. Hurley, late of the United States Shipping Board, said "our merchant marine had reached the zenith of its size, glory, and power," and observe that the American clipper ship had been superseded by steamships some years before that. In other words, our shipping did not pass out along with sailing ships, but on the contrary, we were abreast of the maritime world in steamships when the Civil War broke out.

High Tariff Destroyed Merchant Marine

Up to the time our custom duties had been generally fixed upon the theory of tariff for revenue only, and consequently amounted, in their essential effect, to free trade. That great struggle compelled us to use every device for the raising of revenue; the issuance of long-term bonds, greenbacks, internal revenue taxes of all kinds, and finally heavy import duties.

After the Civil War, while the internal taxes were abolished, the import tariff duties remained, but upon a fundamentally different basis; that is to say, import duties upon purely revenue articles were abolished, while those which served to protect domestic industries were maintained.

The resulting high wages and consequently high costs were beneficial to those engaged in domestic trade and they did not entirely close the door to foreign trade. For one example, out of hundreds of them, an American automobile manufacturer could, if he chose, establish a factory in a foreign country and manufacture part of his product or assemble it with cheaper labor and material and thus be able to compete in foreign markets.

But, in the case of American shipping, the door is completely shut. It cannot take any advantage of lower foreign costs; therefore, when it had to compete with these lower costs, it succumbed and remained succumbed until the World War.

More Public Interest in Protection Than in Shipping

During this period the American people were building railroads, factories, cities, and generally getting rich at a surprising rate, and they did not worry much about shipping; they probably thought, if they thought at all, that there was something the matter with you shipping men. But when the successful American business man has looked complacently down at you, through all these years, he was not taller than you, he was merely standing upon a tariff wall.

Please do not anticipate an attack on the protective tariff, because you will be disappointed. I am in favor of protection. We have prospered under it and I do not believe in tampering with machinery if it is running well.

The president of my company tells of an experience which illustrates the wisdom of this course. He was engaged as superintendent of motive power on a western railroad; and, when he reported to the president for duty, the old gentleman said, "Young man, all our engines are running now, and don't you stop 'em until you know you can start 'em again."

That seems to be the public sentiment regarding our protective tariff; and, with that feeling on the one hand and a lack of public interest in our merchant marine on the other, our shipping would have shriveled up entirely if we had not become involved in the World War, and its passing out would have been noted by our English friends with a conspicuous lack of grief.

As a result of our truly marvelous efforts in shipbuilding during the war we now have a respectable merchant fleet, a large portion of which, it is true, is inactive; but, nevertheless, with the assistance of the United States Shipping Board, who are operating nearly 300 ships through the Emergency Fleet Corporation, we are now carrying about 35 per cent of our foreign commerce in our own ships.

But this is all past history, and a business man usually consigns past history to the wastebasket. In fact, as a guide for current day-to-day operations, that is usually a good place for it. But the past history of our merchant marine points out very clearly what the future will be, assuming certain conditions; and, as there are conditions under which we might again revert to practically a condition of no American ships

in foreign trade, it may be well to ask ourselves if we really need them for any reason.

A British View of American Shipping

Our British friends appear to think that we do not.

Sir Westcott S. Abell says in *Brassey's Naval and Shipping Annual 1925*:

"It is perhaps inevitable that, faced with the problem of such a huge idle fleet and unwilling to write it off her national books as a war loss, America should regard Great Britain's shipping position with an envious eye, and should perhaps unconsciously regard Great Britain's mercantile fleet as a barrier to her own proper sea-trading development. Such an attitude is perhaps hardly reasonable, for there is a sense in which it may be said that the British Empire finances the United States in her trading with the other countries of the world.

"The statement may seem somewhat startling, but an examination of the trade position of the United States in relation to the British Empire will show that it is by no means unjustified.

"In 1923 the total exports of the United States amounted to 4,167.9 million dollars and the total imports to 3,791.9 million dollars, a total favorable balance of 376 millions. . . . In her trade with the British Empire during the year 1923 the United States had a favorable balance of no less than 560.8 million dollars. It, therefore, follows that in her trade with other countries of the world, the United States had an unfavorable balance of 184.8 millions.

"It is, therefore, true that as far as export and import trade is concerned, the British Empire financed the United States operations in foreign countries to the extent of 184.8 million dollars."

In other words, he says Great Britain's superior shipping does not hinder the proper development of our foreign trade because we have a favorable balance of trade with her.

While I cannot follow the reasoning, I think it is clear that he endeavors to show that we do not actually need a considerable merchant marine.

The British Position

I sympathize with England's desire to be strong on the seas both as to her navy and merchant marine. It became necessary when she became a free trade country at the time of the repeal of the Corn Laws and was transformed into a great manufacturing nation; this, together with her growth of population, made it a matter of life or death to be strong on the sea, otherwise she might be starved out.

Therefore, England's position on the high seas is a tender point with her, and our maritime plans should have sympathetic regard to it.

But we need a merchant marine for reasons of our own which do not in any way threaten the security of Great Britain, and the reasons are admirably summarized in the Republican platform of the last presidential election.

"The Republican Party stands for a strong and permanent merchant marine built by Americans, owned by Americans, and manned by Americans, to secure the necessary contact with the world markets for our surplus agricultural products and manufactures, to protect our shippers and importers from exorbitant ocean freight rates, and to become a powerful arm of national defense."

The Democratic platform said about the same thing. Therefore it is fair to say that the American people think they want a merchant marine. Whether they do

actually want one will be shown by the amount of interest which they display in it in the future.

High Costs the Handicap

They need not fear a period of intense mental strain in order to discover what is to be done, because it is simple and plain that the handicap of higher costs must be removed.

If we cannot operate our ships at least as profitably as our competitors, our shipping cannot survive except in very special and limited fields.

There is no doubt whatever that our foreign commerce is the least fortunate of all our industries. As I have already said, practically all of the others enjoy a certain measure of either artificial or natural protection from foreign competition. But those who operate ships in foreign trade not only must compete directly with foreigners, but also must bear the burden of protected prices for material and labor, and in addition must meet certain legal requirements that do not hamper their competitors.

To say that these tremendous handicaps can be overcome by such overworked phrases as American methods, American push, etc., is simply talking to rest one's mind.

Action will keep our merchant marine alive; words will not; and now I have led myself to the place where I must suggest something that can be done or conclude in a brilliant flash of silence upon the only phase of subject which merits your time and attention.

Free Trade Denied Our Shipping

If we should strip our shipping of all its artificial patches, it would, so far as ship owners and operators are concerned, stand forth in the nakedness of free trade; that is to say, it would have the right to buy its ships and have them repaired wherever it could get the lowest price and employ seamen wherever and whenever they could be hired to the best advantage.

Under these conditions it could probably compete successfully with the world, and, not only that, the United States Shipping Board would thus be enabled to get a competitive price for a portion of its ships and could then go out of the shipping business, which is an end greatly to be desired.

The fetching and carrying on the high seas are tinged with romance and adventure, the very life of it is freedom, and it is doubtful if it is ever lusty except under conditions of free trade. Therefore, when we attempt to clothe it in the restrictive garments of a protective tariff system, we must expect it to develop new diseases.

Shipping Entitled to Differential Compensation

If you were permitted to buy and freely repair your ships in the cheapest market, it would threaten our shipbuilding industry. The simplest remedy for that curtailment of action would be the granting of a subsidy by the government as compensation for all or a part of the difference in cost.

Possibly you cannot hope for the right to hire seamen, at the best terms when and where you will. A cure for that is to place merchant marine officers and seamen in a sort of naval reserve, the government to pay the difference in wages and salaries over the competitive rate. It is stated upon excellent authority that this plan will permit us to carry at least 50 per cent of our own commerce in our own ships at a cost to the government of about \$10,000,000 per year—a trivial expense in comparison with the results.

In the interest of world peace 50 per cent should be our limit.

DISCRIMINATING DUTIES

A Critical Analysis of the History of Discriminating Duties in America on Merchant Marine Cargoes

By PETER C. CROCKATT,

Professor of Transportation, Department of Economics, University of Oregon

A GROWING tendency on the part of some nations to view the exports from and the imports to their countries as national commerce and so to claim the right to discriminate in favor of vessels of the national flag against vessels of an alien flag in regard to the marine transportation of such goods and passengers was the subject of official protest by the International Chamber of Commerce meeting at Rome, 1923.

The state of things which now exists, against which protest was made, is partly summarized in the following few examples of what is called flag discrimination.

Discrimination Tendency

"If a British ship, or, for that matter, any ship other than one under the Portuguese flag, puts into Lisbon, dues in gold are demanded, which means that the foreign owner must pay anything from forty to forty-five times as much as a Portuguese owner. The Spaniards have decreed that any vessels calling at Spanish ports, which have not sailed from a Spanish port of origin, must pay double tonnage tax. Roumania imposes an export tax on freights from her ports, from which the Roumanian State Line is exempt. Yugo-Slavia and Italy are engaged in a reactionary policy with reference to shipping, which checks their own trading and injures trade generally. Nothing required by the French government departments, governmental contractors, or French utility companies can be shipped in a foreign vessel unless the Office des Renseignements, which has been established, is first satisfied that equally good terms are not offered by a French vessel. Again, Moroccan produce imported into Algeria in a foreign ship is regarded as foreign unless it is carried under the French ensign, and it is then treated as colonial and exempted from duty.

"Chile and Peru, on the other side of the Atlantic, are also embarked on a restrictive policy of a most irritating and costly description. Within five weeks of the first Portuguese decree, Chile reserved the coasting trade to national vessels, a restriction which, originally applying to the vessels of countries outside of South America, was, by the Regulations of August, 1922, extended to operate against other South American countries. The immediate result was the withdrawal of foreign lines and the monopoly of the one Chilean line in existence. This line promptly proposed an increase of 100 per cent in its freights. About four weeks later, Peru retaliated with a measure restricting Peruvian coasting trade to national vessels, which openly avows indignation at the Chilean policy as its incentive."

Shipping Board Operation

The same writer, Archibald Hurd, adds: "And then we have the spectacle of the United States resorting to artificial means of supporting American shipping to the injury of all other shipping. President Coolidge has recently announced that until the State merchant fleet, built during the war, can be sold 'advantageously' to private interests 'it must be operated as economically as possible under such plans as may be

devised from time to time by the Shipping Board'—which means that it will be exempt from taxation, that losses incurred will continue to be found by the American taxpayer, and that various means will be adopted to favor these State ships in ocean trading if public interest can be sufficiently aroused in support of such a policy.

Coastwise Discrimination

"Nor does that complete the record of folly; for most countries—and in particular France, Spain, Belgium, Japan, Russia, Portugal, Brazil, Argentina, and the United States—persist in reserving their coasting trade to their own vessels. It is even suggested in the United States that a voyage from any American port to the Philippines, on the other side of the Pacific, should be regarded as coming within that narrow definition. Again, the doctrine of coasting trade has been interpreted by some nations in Europe as extending to 'inland seas.' The Mediterranean is consequently regarded as 'an inland sea,' and a voyage from Marseilles to Tunis, both ports being under the French flag, is treated as a coasting voyage, and all but French ships are penalized. The application of the same principle to the British Empire would shut out foreign ships from trading between Calcutta and Rangoon, Singapore and Sydney, and Suez and Aden, or making such a coasting voyage as Bombay-Karrachi-Basrah. An additional check on freedom of sea transport is due to the practice of collecting income tax from foreign shipowners on freights, though, in fact, those freights may yield no income, but a loss."

It is not the purpose of this article to take up the various methods, with arguments for and against, of flag discrimination, but it is to confine the discussion to the live topic of a return to the policy of discriminating duties as a means of upbuilding the American merchant marine.

Early Discrimination in United States

In looking back into the first examples of discriminating duties in United States history, we find that the fifth section of the Tariff Law of July 4, 1789, provided for a discount of 10 per cent of all the duties imposed by the act on importations in vessels owned by Americans. The act provided for a very large discriminating duty in favor of American ships in the importation of tea, and imposed a duty of 12 per cent ad valorem on all importations from China and India in ships other than those of the United States.

The second act passed by the Congress imposed discriminating duties on tonnage, whereby American ships were taxed at the rate of six cents a ton. Ships thereafter built in the United States, belonging wholly or in part to foreign subjects, were taxed at the rate of thirty cents a ton, and all other ships at the rate of fifty cents a ton. This act further provided that the American ship when employed in the fishing and coasting trade should pay tonnage once a year, whereas a foreign ship, so employed, should pay fifty cents per ton for each entry. This amounted to a reservation of the fisheries and the coasting trade to the American

ships. It will be observed that this act gave a discrimination in favor of the American-built ship by whomsoever owned.

Cause and Effect

Extreme divergence of opinion exists today as to the cause and effect of discriminating duties in American mercantile marine history. The following are the leading contentions of those who saw high purposes and favorable effects in these American discriminating duties: first, that it was the policy of the fathers of the Republic to encourage a merchant marine by discriminating duties; second, that the policy was successful in building up a prosperous merchant marine to the extent of carrying three-fourths of our commerce; that the fear of retaliation in early years was not well founded; and third, that as a result of courageous facing of a national problem America's merchant marine prospered.

As against these contentions it is argued that "the prosperous eras of the early American merchant marine occurred firstly during the progress of European wars, when this country had the advantage of neutrality; and secondly, after the policy of discriminating duties had been entirely abandoned in favor of liberal and equitable reciprocity; that during the period from 1818 to 1830, while the world was at peace, while trade competition was keen and this country was discriminating unmercifully against British vessels sailing to and from the West Indies and the North American colonies, our average tonnage employed in foreign trade was lower than at any time since 1799, except a short period (1802-31), when the world was not at war; that the days of real progress occurred from 1831 to 1861, when there were practically no discriminating duties; that in 1847 the tonnage employed in foreign trade was greater than at any time in our previous history, and from 1847 to 1861 it considerably more than doubled; that the only period of rapid and sustained growth of the American merchant marine prior to the Civil War began in 1831, immediately after the abolition of discriminating duties in the British Colonial trade; that the official records show that with the exception of partially defending herself from the discriminations of other nations of finally inducing or forcing competitors to accept the principle of liberal reciprocity, the United States did not derive any special benefit from its discriminating policy; that she did not take it as a first choice, she did not believe in it except as a means to commercial freedom, she did not practice it any longer than necessary, and she did not thrive under it or because of it; that discriminations were devised as weapons against the discriminations, exclusions, monopolies and other devices practiced by other nations, a policy that practically all other nations, including our own, finally came to regard as a mistaken one.

Before proceeding to the contentions relating to the present day problems of a return to discriminating duties, let us examine briefly the illuminative features from the historical record. So far as statistics go, the argument is clearly with the opponent of discriminating duties; but so far from proving a case against discriminating duties, they prove that a variety of causes operated to cause the rise of the American merchant marine until the Civil War.

Early Discrimination Retaliatory

In searching back through America's experience with discriminating duties to find in the first place the leading reason for these duties, we are led inevitably to the conclusion that retaliation against the policy of

Great Britain, principally her reservation of the West Indian trade, was the chief obstacle in the way of reciprocity with all nations. Other purposes are found in the discriminating duties and various vital observations will be made concerning their use, but first let us look into the proof and conditions surrounding this assertion as to the chief motive of America's discriminating duties. Certainly they were not used as an affirmative program of upbuilding the American merchant marine.

Out of many references which could be made we select the following. The Senate Committee on Foreign Relations in a report submitted on March 15, 1822, used these words:

"It must be always remembered that the countervailing measures which have been adopted by Congress are entirely defensive; and as we desire to concur in the establishment of a free trade with every nation, we are ready to abandon the restrictions on the English navigation as soon as England manifests a disposition to give up the restrictions which she was the first to impose on our navigation. And does public policy require, or will the national honor permit, that we should do so sooner?"

The Secretary of State, Mr. Clay, in a letter dated October 11, 1826, wrote:

"The government of the United States has always been anxious that the trade between them and the British colonies should be placed upon a liberal and equitable basis. There has not been a moment, since the adoption of the present constitution, when they were not willing to apply to it the principles of fair reciprocity and equal competition.

Prior to the first law on discriminating duties, discussion in Congress in 1784 was to this effect:

"Unless the United States in Congress assembled, shall be vested with powers competent to the protection of commerce, they can never command reciprocal advantages in trade; and without these, our foreign commerce must decline, and eventually be annihilated. Hence it is necessary that the states should be explicit, and fix on some effectual mode by which foreign commerce, not founded on principles of equality, may be restrained.

"Already has Great Britain adopted regulations destructive to our commerce with her West India islands. There was reason to expect that measures so unequal and so little calculated to promote mercantile intercourse would not be persevered in by an enlightened nation. But these measures are growing into system. It would be the duty of Congress, as it is their wish, to meet the attempts of Great Britain with similar restrictions on her commerce."

On June 11, 1792, Jefferson wrote to Thomas Pinckney, our Minister to Great Britain:

"I particularly recommend to you, as the most important of your charges, the patronage of our commerce, and its liberation from embarrassments in all the British dominions; but most especially in the West Indies."

Complete reciprocity was the ultimate goal of the fathers of the Republic.

A declaration of Mr. Madison is directly to the point:

"I am clearly of the opinion," said he, "that a discrimination will have the most salutary effects; it will redound both to the honor and interest of America to give some early token of our capacity and disposition to exert ourselves to obtain a reciprocity in trade."

"The policy of the United States in relation to their commercial intercourse with other nations is founded on principles of perfect equality and reciprocity. By the adoption of these principles, they have endeavored to relieve themselves from the discussions, discontents, and embarrassments inseparable from the imposition of burdensome discriminations. These principles were avowed whilst they were yet struggling for their independence, are recorded in their first treaty, and have since been adhered to with the most scrupulous fidelity."

"I will not enlarge on this subject; but it must be apparent to every gentleman, that we possess natural advantages which no other nation does; we can, therefore, with justice, stipulate for a reciprocity in commerce. The way to obtain this is by discrimination; and, therefore, though the proposed measure may not be very favorable to the nations in alliance, yet I hope it will be adopted for the sake of the principle it contains."

Mr. Fitzsimons of Pennsylvania in agreeing with Mr. Madison that "we now have the power to avail ourselves of our natural superiority" stated "that the trade of the United States was of so much importance to Great Britain, that she would willingly grant our shipping reciprocal advantages in the West India ports rather than run the risk of losing it; he was entirely in sentiment with the gentleman from Virginia (Mr. Madison), that it would be possible to meet that nation with regulations which would force her to open her West India ports."

To sum up the historical record of America's experience with discriminating duties it will be seen that the arguments of the opponents to a return to the system are upheld. Discriminating duties by the United States were weapons to obtain reciprocity and not primarily to build a merchant marine. A communication from Mr. Buchanan to Lord Palmerston in November 3, 1847, states:

"Universal reciprocity, in the widest sense, is held by the American Government as the only thoroughly appropriate basis for intercourse between two great nations. The prohibition of the indirect trade has but restrained enterprise; it has done good to neither country. To abrogate it, would at once set free dormant commercial wealth, without injuring anyone."

And still further R. J. Walker, Secretary of Treasury, in 1849, proves the opponents' contention:

"Arbitrary restrictions upon navigation or trade are as adverse to the liberal spirit of our institutions as they are opposed to our true interests. The Navigation Act of March 1, 1817, was passed with a view to counteract the restrictive policy of other nations, and mainly in reference to that of Great Britain operating as was alleged to the prejudice of our own shipping and trade.

"In conclusion I would remark that the contemplated measure on the part of the British Government is deemed in consonance with the enlightened views and spirit of the age, tending to unfetter navigation and trade, and throwing them open to free and honourable competition, thus reducing the charge for freight, which is deemed a tax upon industry and its products, and hence any act whereby such charge is diminished is highly advantageous to all parties."

British Discrimination

Perhaps nothing could be clearer in condemnation of a policy of discriminating duties as an affirmative program for the upbuilding of a merchant marine than

the record of Great Britain, who held to the policy long after other nations had accepted the American offer of complete commercial reciprocity. It was whispered about that the Navigation acts instead of promoting the welfare were actually contributing to the decay of the British mercantile marine. A parliamentary committee in 1836, when investigating the causes of wrecks, reported that the British ships "were faulty in design and as sailers so slow that British shipowners feared free trade because they knew that successful competition on equal terms with foreign ships was impossible." This committee severely criticised British ships and their owners as well as a majority of officers and men, and the report bore out the repeated statements in the House of Commons by Joseph Hume that "the Merchant Navy was losing its place among the mercantile marines of the world."

Conclusion

It is not a mere doctrinary free trade statement that the self interest of a country dictates against those hindrances and barriers to the free and competitive flow of commerce. It is to the interest of any country that its goods be carried at the lowest competitive rates by sea. Discriminating duties do raise the cost of sea transport in the long run by diverting labor and capital into such maritime enterprises as are defended against economic competition, diverting such labor and capital from those enterprises which can show a greater return when using the advantages of low economic competitive ocean costs. The improvements in ocean shipping as to speed, efficiency, safety, and so forth can operate to greater advantage when internationalized by free competition so as to lower freight and passenger costs. All will benefit accordingly.

It is fair to state that these arguments do not apply to protective tariffs applied to economic infant industries or to scientifically and steadily applied subventions, mail credit, etc., used to build up ultimate justified economic advantages. America has proved that protection to home industries may build up mass production and ultimately a great export trade; but to turn around, make imports of required raw material cost more and make this export business difficult to move by raising the cost of ocean transport are wasted energy. Properly and steadily applied subventions have the advantage over discriminating duties in not interfering with American business but permitting not only a selectively built up American merchant marine on certain types and also a naval auxiliary program.

It seems to the writer that the time has passed for a return to discriminating duties. Every effort is being made nowadays to promote goodwill; but for America to abrogate all her treaties of reciprocal advantage which interfere with discriminating duties would seem to be an unfortunate gesture. The steady progress and consistent drive for reciprocity exemplified in the history of this country with others call for the showing of very good and sufficient reasons for a reversal of policy. Furthermore, the rise of the United States in these days as the greatest creditor nation not only places America in a position of unquestioned advantage but also puts her in a position of requiring a commercial policy which will allow debts to be paid in goods. In conclusion it would seem better to adopt accepted subvention and other methods with the other nations, carry out the policies and aims of the fathers of the Republic, and even take a lead in promoting such improvements in ocean carriage with little interference from falsely conceived protections.

PORTS OF THE PACIFIC

IMPROVEMENTS DEVELOPMENTS ACTIVITIES

Honolulu. The War Department announced the first of April allotments for river and harbor developments at Hawaii, which will bring the total developments to \$30,683,510. The revised allotments include: for Honolulu Harbor, \$228,000; for Kahului harbor, \$10,000; and for Nawiliwili harbor, \$396,000.

Bids were opened at Honolulu on March 28 for construction of Pier 11, as follows: E. J. Lord, \$143,504 and 180 days; Ralph E. Woolley, \$157,491.86 and 310 days; George E. Marshall, \$157,742.90 and 200 days; Walker & Olund, \$165,000 and 280 days; and the Hawaiian Dredging Co., \$178,241 and 250 days. Contract was awarded to E. J. Lord.

San Francisco. Governor Richardson on April 6 signed Senate Bill No. 196 creating the Islais Creek Reclamation District at San Francisco. This district includes 212 acres of swamp land in the Islais Creek Basin, south of the city, and will make an ideal industrial area. The cost of this work is estimated at one million dollars. The construction of a seawall at an approximate cost of half a million dollars is also proposed. Trustees of the district shall be Colbert Coldwell, president of the San Francisco Chamber of Commerce; M. M. O'Shaughnessy, city engineer, and Stuart F. Smith, vice-president of the Bank of California, all of whom will hold office for a term of four years.

Seattle. The Canadian Pacific Railway has leased 18,000 square feet of space on the Bell Street wharf to establish port facilities for the new vessels to be put on the triangular Puget Sound run, the Princess Kathleen and Princess Marguerite. The Seattle Port Commission will make extensive alterations and provide passenger terminal for the company.

Bellingham Port Commission has awarded Cory & Weber labor contract for a 250 foot extension to its dock on the Whittcom Creek Waterway. The War Department has appropriated \$16,000 to the harbor, which will be used in the removal of Sturr Rock, which has long been a menace to navigation.

Vancouver, B. C. The Canadian National Railways are making arrangements for extensive developments on the Fraser River. Two



Fine new wrecking tug Salvage King of the Pacific Salvage Corporation, Victoria, B. C.

grain elevators and new government docks are proposed as the nucleus for the development plan.

Alaska. Appropriation of \$500,000 for the improvement of Wrangell Narrows, Alaska, was made in the Rivers and Harbors Bill recently approved by Congress. The scheme for the improvement includes the straightening of the steamship channel in a number of places, the removal of several dangerous reefs and rocks, and the dredging of the harbor of Petersburg.

Richmond, California. Plans are being prepared by the Richmond Harbor Board for a wharf 405 feet long and 73 feet wide, sufficient to accommodate two schooners, to be known as Wharf No. 2. Dredging from the channel line to the site of the new dock will also be necessary.

Los Angeles Harbor. The Engineers of the Los Angeles and Long Beach harbor boards have completed plans for a unified port railroad belt line system to connect all the railway terminals and docks of Wilmington, Long Beach, and San Pedro. The unification of the rail lines at the two harbors is part of the condition made by the government engineers in approving the greater harbor development plan and the building of a breakwater to cost \$3,500,000. Plans for a port district are being drawn up by the harbor boards of Los Angeles and Long Beach, to be submitted to the state legislature after approval

by the city councils. The Santa Fe, Southern Pacific, Pacific Electric, and Union Pacific railroads will be included in the belt system.

Oakland. With the award of a contract for the construction of a tube under the estuary between Oakland and Alameda and the consequent assurance of the removal of the Webster Street bridge joining these two cities, the last obstacle in the way of the \$875,000 dredging program for Oakland inner harbor has been removed. The government engineers have indicated that the bids for the project will be called as soon as plans for the dyke between Oakland and Government Island are completed, and that contract for the work will be awarded to just one firm, rather than break the work up into small contracts, which would diminish the amount of work which could be accomplished with the appropriation.

Portland. Balfour, Guthrie & Company are considering the question of erecting two grain elevators here at an estimated cost of about \$250,000. W. J. Burns of San Francisco and Alex Baillie of Seattle, partners in Balfour, Guthrie & Company, were in Portland to confer with A. Patullo, local manager, on the question. Under tentative plans, one elevator of 10,000 tons capacity would be added to the Irving dock. Another of 6000 tons capacity would be built at the company's Front and Pettygrove street mill.

A NOTABLE SEA HISTORY

British Publication Covering Marine Development, Naval and Commercial, From the Earliest Times Down to the Present Era

CAPT. FRANK C. BROWN is certainly meeting a long felt want with his new publication, "The Sea, Its History and Romance." In this very ambitious effort he describes in clear, readable style the development of man's conquest of the sea.

The work is being published in about twenty monthly parts, which are intended to be bound in volumes of four parts each. The typographical work is excellent and is imprinted on the very best quality of book stock. The illustrations are profuse and comprise reproductions of marine prints and paintings from some of the most famous collections in the world, notably from that of A.

G. H. MacPherson, who owns the finest extant collection of sea and ship prints and who has turned over his entire holdings to the owners of this book for purpose of illustration. The first four parts, forming Volume I, are off the press and being distributed. These carry the story down to the beginning of the Eighteenth Century. Other parts will follow at short intervals.

In these pages we live again through the thrill of the old sea battles, when ships grappled and fought at short range—the days of Grenville, and Drake, and Howard, of Raleigh, and Hawkins, and Forbisher; days when the great deep was still full of wonders and bold free spirits everywhere sought adventure and



Sea battle in the Mediterranean by which Scipio Africanus wrested the sea supremacy of Carthage and established the authority of Rome over the then known western world, reproduced in "The Sea, Its History and Romance," from an old print in the collection of A. G. H. MacPherson.

fortune thereon; days of the great discoveries, when any bold seaman could spin a yarn without check of telegraph and radio.

The scheme of publication places this very valuable series of illustrations and the authoritative text within the means of anyone who loves the sea and ships. The price of each part as issued is 2 s/6 p, or 60 cents. Notwithstanding this low price, the work is of sufficient excellence to grace the most elaborate binding which could be desired by the most fastidious connoisseur.

Halton & Truscott Smith, Ltd., 57 Haymarket, London, S. W., are the publishers.



British privateers of the Seventeenth Century cutting out Spanish trader ships, as reproduced in "The Sea, Its History and Romance," from a print in the A. G. H. MacPherson collection.

WORLD'S GREATEST AIRPLANE CARRIER

U. S. S. Saratoga Launched at New York Shipbuilding Company's Yard, Camden, New Jersey, Equipped With General Electric Propulsion

THE U. S. S. Saratoga, started with several sister ships, as the greatest battle cruisers of the world, subsequent to the disarmament conference was changed over to be finished as an airplane carrier.

This giant vessel, supporting a perfectly clear airplane deck 105 feet wide by 888 feet long, was launched April 7 at the Camden shipyard of the New York Shipbuilding Corporation. She was christened by Mrs. Curtis D. Wilbur, wife of the Hon. Curtis D. Wilbur, Secretary of the Navy.

The Saratoga will be equipped by the General Electric Company with a turbo-electric power plant, which will deliver to the propelling motors 180,000 horsepower. This power will be distributed over eight motors working in straight tandem pairs on four propeller shafts, each motor contributing 22,500 horsepower or 45,000 horsepower per shaft, said to be "the greatest horsepower per shaft that has ever been projected in any marine installation." This propelling equipment will drive the 35,000-ton displacement hull of the Saratoga at a speed between 33 and 34 knots, or approximately 40 miles per hour.

The generating plant will consist of four 35,200 kilowatt turbo-generator sets. Steam for the turbines will be generated by sixteen oil-fired water-tube boilers. Each turbo-generator set is about 40 feet in length and each pair of motors about 34 feet in length. The total weight of the propulsion apparatus will be in the neighborhood of 2200 tons.

In addition to the main turbo-generators, six 750



Two of the 22,500-horsepower propeller motors built by the General Electric Company for the U. S. S. Saratoga.

kilowatt direct current auxiliary turbine generators will furnish current for all electrical purposes except main propulsion. This covers the operation of steering gear, anchor windlasses, ventilation fans, elevators for the lifting of the airplanes from storage rooms to the flying deck, boat cranes, galley applications, sanitary, fire and circulating pumps and the entire lighting system.

At one side of the flying deck, and designed to occupy as little thwartship space as possible, is a superstructure containing a funnel and a skeleton military mast with topmast for carrying a radio aerial. Radio apparatus for the reception and transmission of messages will be

exceptionally powerful and the last word in naval radio equipment.

It is expected that the Saratoga will be completed and commissioned late in 1926. She will then be the largest and fastest airplane carrier in the world and will be the longest naval vessel of any description in the world.

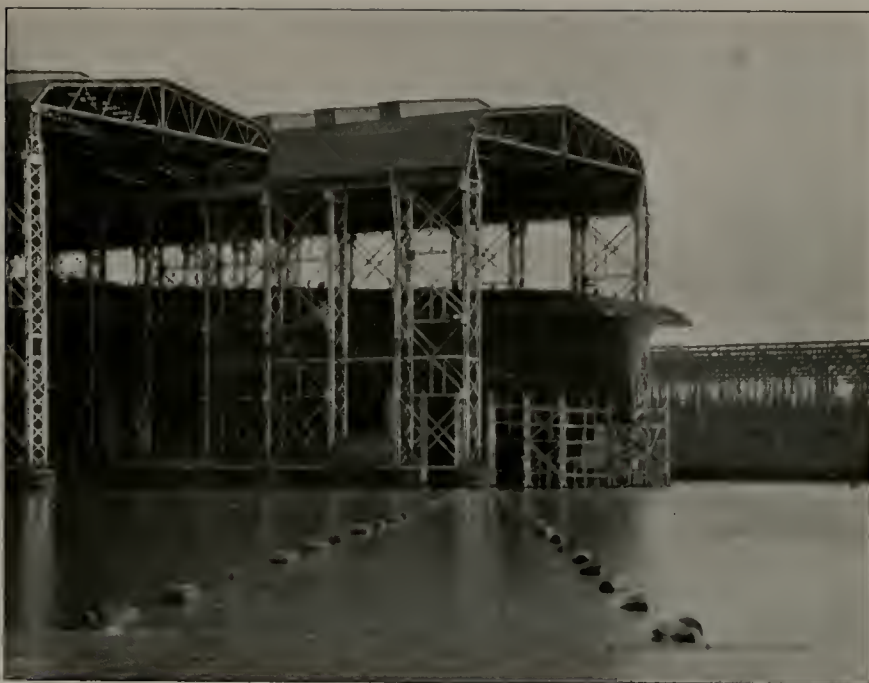
It is interesting to compare the dimensions of the Saratoga with those of the Langley, which is the largest United States airplane carrier now in commission and which is at present accompanying the United States battle fleet in the maneuvers on the Pacific Ocean. The Langley was formerly the United States fuel ship Jupiter, built in 1912. She was converted in 1920 to an airplane carrier. Her principal characteristics are: displacement, 19,360 tons; length, 542 feet; beam, 65 feet; mean draft, 27 feet. She has a shaft horsepower of 7161 and a sea speed of 15 knots. Incidentally, she is the original

electric drive ship of the United States Navy, and was fitted with General Electric turbo-generators. Aside from a tremendous difference in horsepower, speed, and size, the Saratoga carries many refinements of equipment unknown on the Langley. The capacity of the Langley is less than one-half that of the Saratoga, the Langley being able to take care of about thirty airplanes.



An artist's conception of the appearance of U. S. S. Saratoga when completed, showing her long, clear airplane landing stage.

The World's Greatest Airplane Carrier U. S. S. Saratoga



U. S. S. SARATOGA

In the upper illustration is shown the Saratoga ready for launching at the Camden Yard of the New York Shipbuilding Corporation. Note the peculiar form of the stern of the vessel and the overhang of the airplane deck. Note also the great covered shipbuilding way which distinguishes this yard from all other American shipbuilding plants. Center view shows the long graceful hull of the Saratoga taking water in the Delaware River. The lower view gives a good idea of the tremendous sweep of the clear airplane platform presented by the Saratoga's deck, also of the extent of the covered shipbuilding way in which she was built.

THE TIDAL WAVE IN THE TULE

An Interesting Hulk Recalling the Palmy Days of the Wind-Jamming Lumber-Droghers of the Pacific

IN the illustration herewith, which is a reproduction from a photograph taken recently at Sherman Island, near Antioch, California, in the delta of the Sacramento and San Joaquin Rivers, we see an old hulk lying between two new hulks. The old hulk, having served a long and useful life, is here being gradually destroyed by the elements; the new, having already burned themselves out in a hectic jazz crazed youth, have served no useful purpose except possibly that of helping develop a psychological terror during the late war.

It is of the old hulk that we write and of her former glories as a fast coastal bark in the lumber trade between San Francisco and Puget Sound. This hulk is that of the *Tidal Wave*. She was built at Port Madison, Washington, and launched in April, 1869, her original owners being Meigs and Gawley of the Port Madison mills. Her dimensions are 161 feet 5 inches length, by 37 feet 2 inches beam, by 13 feet 7 inches molded depth and 603 tons net register.

In 1887 she was owned by W. C. Sayward and in the early 1900's she was bought by the Union Lumber Company, who changed her into a barge for towing purposes and used her between Fort Bragg and San Francisco. In 1909 she was laid up at Antioch.



An unusual view showing the hulk of the fine old lumber drogher *Tidal Wave* lying in the tules on Sherman Island, California, between the hulks of two modern Shipping Board wooden steamers.

other has been sunk in the river to aid in forming a channel.

The *Tidal Wave*, in 1870, made a very notable round trip run between Port Madison and San Francisco, being 22 days from the Puget Sound port to the Golden Gate, discharging and return to Port Madison. In December, 1872, she made the round trip in 25 days, making the run from San Francisco to Port Madison in 5 days. In 1877 she made five similar voyages inside of five months.

A similar bark, the *Vidette*, was built at Bath, Maine, in 1865 and brought to the Coast shortly afterwards by Captain Merrill for lumber coasting. Her career after the early 1900's is identical with that of the *Tidal Wave* and she was laid up at Antioch at about the same time. There was much confusion of identity between the two hulks. The one in our illustration still lies in the mud on the island,

LARGE MOTOR FOR CLACKAMAS

A 2700- HORSEPOWER motor, to be used for the driving of a centrifugal pump in the new diesel-electric dredge Clackamas for the Port of Portland, was shipped from the East Pittsburgh plant of the Westinghouse Electric & Manufacturing Company to Portland, Oregon, recently.

The motor is the largest of its kind ever built for use in a centrifugal pump and was made on a special order from the Port of Portland Commission. This commission, which is appointed by the governor of Oregon, has charge of the navigation clearance of the Columbia and Willamette rivers, Portland being about 110 miles inland from the Pacific Ocean.

The dredge for which the huge motor was prepared is described in *Pacific Marine Review* for December, 1924, on page 627.

The motor weighs 40 tons, its frame being 11½ feet in diameter and the shaft being 12 feet in length. The Northern suction pump, which it will drive, is to be used mostly in the cutting down of sand bars in the Columbia River, which have obstructed steamship traffic in the river greatly in the past.



The Pacific Coast bark *Tidal Wave* reproduced from a photograph taken in the '80's.

COASTAL NAVIGATION

Notes on a Practical Mental Method of Determining Distance Offshore and Direction of Drift

By CAPTAIN B. AILLET,
Special Representative of the French Line

I HAVE read with much interest the article in your March issue by E. B. Bronte, on Coastal Navigation. There is certainly nothing to criticise in all this article, and every officer ought to be very familiar with the methods mentioned. I only desire to call attention to the fact that in navigation there is no accurate way to determine the position of a ship except by using two or more simultaneous "loci". For instance, two or more bearings of different objects, one bearing and one distance, two angles, etc.

With the increasing use of the range finder in practical navigation, the method by one bearing and one distance will be more and more employed, especially on the large liners which are fitted with a gyro-compass, giving them immediately the true bearings.

Although any method not using simultaneous "loci" is not accurate, it is possible to get a very good approximation by the following method which allows the officer on watch to find mentally the distance at which the ship will pass from the given point.

In some very frequented seas, like the English Channel, for instance, one meets a ship, or fishing boat, every few minutes; sometimes at night, poorly lighted fishing craft will pop up suddenly a few hundred yards ahead. The officer must be constantly on the alert. If he goes into the chart room, or if he looks at a lighted chart, he will be dazzled by the light and it will be

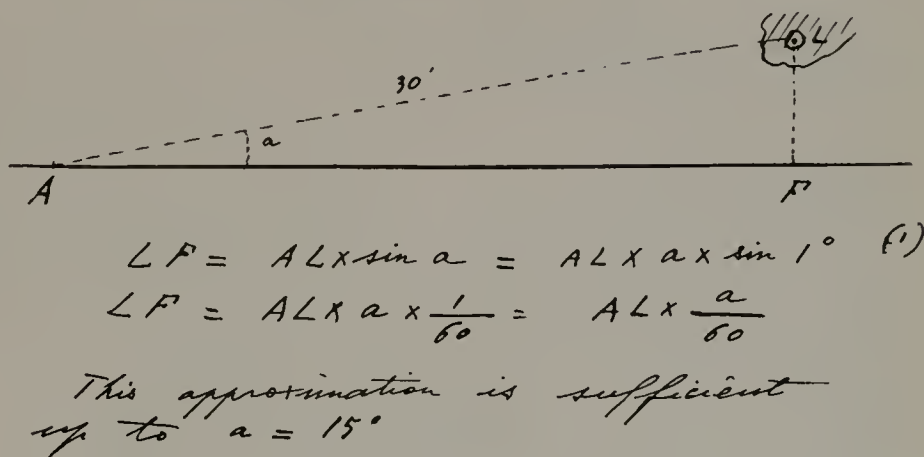


Fig. 1.

a few seconds before he regains his normal sight. These few seconds may be vital. A ship at 24 knots makes 0.4 of a mile in a minute—that is, about 800 yards. A few seconds, more or less, may be a question of life or death, perhaps, not for the larger liner, but at least for the small craft.

The method described hereafter enables the officer to do all operations mentally, and if he has had the precaution to study the charts before beginning his watch, he will not need to go into the chart room nor even to look at the map.

Let us assume that a ship making 22 knots is about to enter the English Channel, coming from New York, and desires to pass five miles south of Bishop Rock.

Assume that at a certain time the officer on watch, whose elevation

over the water is 70 feet, sees the light straight ahead and just appearing above the horizon. His distance at that moment will be, for instance, 30 miles. (This is to be found out before beginning the watch.)

As it is necessary to pass 5 miles south, mentally the officer makes the following calculations:

$$\begin{array}{r} 5 \quad 10 \\ - \quad - \\ 30 \quad 60 \end{array}$$

and by leaving Bishop Rock 10 degrees on the port bow and keeping that course, the ship will pass at 5 miles (see Fig. 1.)

The fraction $5/30$ is transformed into 60ths because $\sin 1^\circ$ equals $1/60$. This is the first approximation, but it cannot be enough for safe navigation; however, as the ship is still 30 miles from Bishop Rock there is no immediate hurry.

As the ship gets nearer, the bearing from the bow increases more and more. Note the time, B, when the light is 27 degrees from the bow (see Fig. 11); note also the time when the light is 34 degrees from the bow, there is, for instance, a difference of $7\frac{1}{2}$ minutes between the two bearings. The ship will have made during this $7\frac{1}{2}$ minutes 2.8 miles, and will pass at 2.8 multiplied by 2, or 5.6 miles from the light.

Again note the time, D, when the light is 45 degrees from the bow if the difference between C and D is $7\frac{3}{4}$ minutes, the ship will have made during that time 3 miles, and

(Continued on page 241)

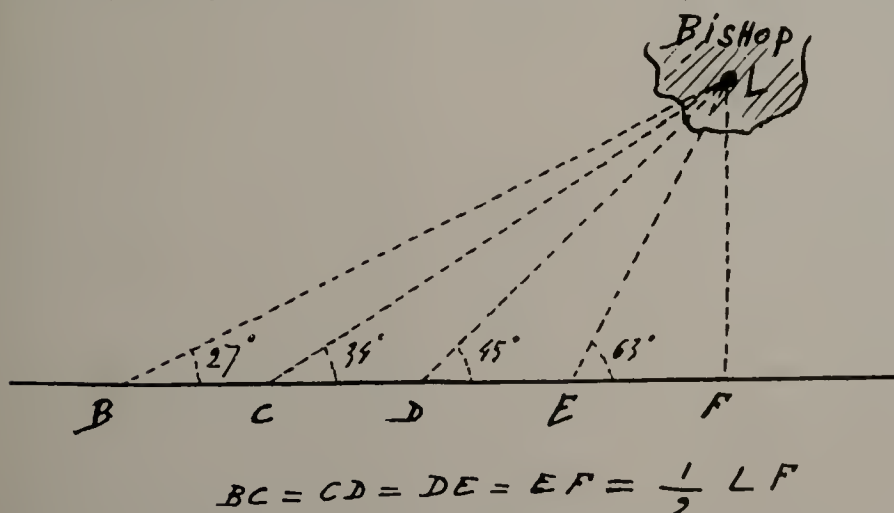


Fig. 2.

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

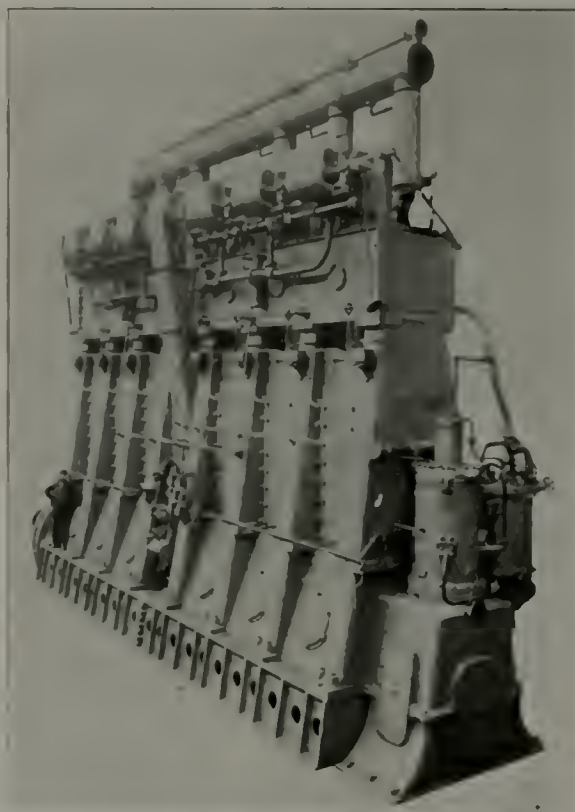
AN INTERESTING CONVERSION

The New York Shipbuilding Corporation Transforms the Shipping Board Steamer Jacksonville Into the New York-Werkspoor Diesel Engined Motorship Jacksonville, With a Decided Gain in Economy of Operation

THERE is now nearing completion at the plant of the New York Shipbuilding Corporation, Camden, New Jersey, the motorship Jacksonville, which has been converted from the steamship of the same name built in 1919 for the Shipping Board and acquired from the latter by the New York Shipbuilding Corporation.

This vessel was built as a single deck, three island type, Isherwood construction, bulk freighter. In the process of conversion a second deck was added to make her adaptable to general cargo. In addition to this change in construction there was the necessary reconstruction of foundations in way of the engines and boilers to take the New York-Werkspoor diesel engine and also a few modifications to casings and quarters on the bridge.

The general particulars of the vessel are shown in the following table:



New York-Werkspoor type diesel for the motorship Jacksonville, 2000 I. H. P. at 110 R. P. M.

Of the original machinery plant, the windlass and cargo winches only remain.

Steamship	Motorship
Length over-all	346' 6"
Length between perpendiculars	334' 6"
Depth to upper deck	27' 6"
Breadth molded	48' 0"
Draft loaded	22' 5 1/2"
Deadweight tonnage	5,740
Cargo capacity	259,933
Gross tonnage	3,532
Net tonnage	2,151
Fuel oil capacity, tons	1,179
Reserve feed water, tons	517
Shaft horsepower	2,000
R. P. M. of propeller	90
Estimated service speed, knots	10.5
Estimated daily fuel consumption, tons	24.6
Corresponding radius, nautical miles	12,000
Cargo deadweight at 10,000 miles radius	4,400

Main Engine

The engine is a 6-cylinder, 4-cycle, single acting crosshead type, directly reversible New York-Werkspoor diesel, having over-all dimensions of 39 feet 4 inches length without fly wheel; 10 feet 3 inches width; 22 feet 4 inches height from center of the crankshaft to the top of the valves. This engine has a total weight of 275 short tons and is capable of developing 2000 indicated horsepower or 1540 brake horsepower at 110 revolutions a minute. It will be seen that this works out for a weight of 360 pounds per brake horsepower.

It will be noted from the illustration that this engine is a very good workmanlike design. The columns, which are built in sections to permit the rolling out of the crankshaft, carry only the strains of the crosshead guides and of the deadweight of the upper structure. The main stresses are taken by 4 3/8 inch diameter steel tie rods, which extend through the bedplate in such fashion that the columns are always under compression and the tie rods under tension.

Handling gear is so arranged that the engine is divided in two units of three cylinders each, the forward lever controlling the three forward cylinders and the after lever controlling the three after cylinders, with a common reverse lever for all six cylinders. The crankshaft is built up of forged steel. Each crank pin and its webs are made from one billet and shrunk onto the journals. A horseshoe type bearing with eight collars takes the thrust of the propeller, which is of the four-blade built-up type, having a diameter of 14 feet 6 inches and a pitch of 10 feet 6 inches.

Auxiliary Machinery

Three 40 kilowatt 230 volt direct-current generators, each driven by a direct-connected, 60 brake horsepower, 2-cylinder, 2-cycle solid injection diesel engine, are located on the starboard side of the engine room and furnish power for electric



The New York-Werkspoor diesel-engined motorship Ashbee, sister of the motorship Jacksonville.

lights and for the electrical driven auxiliaries. These latter include: One vertical, three stage air compressor; two fuel oil transfer pumps; two lubricating oil pumps; two cooling water circulating pumps; one main engine turning motor; one engine room bilge pump (piston cooling); one fire, bilge and general service pump; one ballast pump; one sanitary pump; one hot water pump; two engine room ventilator blowers; one 1-ton refrigerating machine; and one double ram, two-cylinder hydro-electric steering gear. There is one vertical boiler, 8 feet 1 inch mean inside diameter by 14

feet high, with 1390 square feet of evaporating heating surface and designed for a working pressure of 125 pounds. This boiler, fully equipped to burn fuel oil under natural draft, is located on the port side of the engine room and supplies steam for the following auxiliaries: One boiler feed pump; one engine room bilge pump; two boiler fuel oil service pumps; one auxiliary condenser circulating pump; one auxiliary condenser air pump; one fresh water pump; one auxiliary 10 kilowatt generator set; one emergency air compressor; one windlass and ten cargo winches. The boiler will also

have steam connections to fuel oil recirculation and boiler service heaters, steam coils in oil tanks, steam strainer for main engine fuel oil supply, hot water system for auxiliary diesel engine starting chambers and for the ship's heating system. For any at sea requirements, steam will be provided by an exhaust gas steam generator in the exhaust line from the main engine. This will take care of fuel oil heaters, steam coils, hot water system, steam strainer, and the ship's heating system. The steam driven auxiliaries will ordinarily be used only in port. For handling the fuel oil supply to the main engines there are two daily supply tanks, each with a capacity of 1435 gallons; one light oil starting tank, with a capacity of 2875 gallons; and one oil drain tank, under the engine room floor plates. This in connection with the "R and D" system of preheating fuel oil in the inner bottom and deep tanks, gives a very complete transfer and service feature and enables the vessel to operate on a very heavy grade of oil, the light oil being used to start the auxiliary diesel engines. The lubricating oil system is equipped with one 100-gallon filter of the Richardson-Phoenix marine type, and also with a centrifugal separator.

FUEL OIL FOR AMERICAN VESSELS
THE accompanying table, compiled by the American Petroleum Institute, shows the various uses and locations of bunker supplies of fuel oil for America's merchant marine and navy fleet for the years 1923-24. It will be noted that there is an increase of 16.6 per cent in the totals of 1924 as compared with 1923. The Navy use is growing faster than the merchant marine use, the increase in the use of the navy being 21 per cent as against 16 per cent for merchant vessels. The total used by merchant vessels is approximately twelve times that used for the Navy. The deliveries at Pacific Coast ports, in round numbers 29 million barrels, amount to 39.8 per cent of the total; while this represents an increase in the amount of oil, there is a decrease in the percentage of totals, Pacific Coast having represented 42.7 per cent in 1923. One point, however, which will be noted with satisfaction is that all deliveries at Pacific Coast ports were of

		FUEL OIL DELIVERED FOR SHIPS' BUNKERS					
		1924 and 1923					
		(Barrels of 42 gallons)					
		AT ATLANTIC COAST PORTS					
		Domestic Oil Barrels	Per Cent of Total	Mexican Oil Barrels	Per Cent of Total	Total Barrels	Per Cent of Total
1924		18,856,000	34.7	11,677,000	62.4	30,533,000	41.8
1923		12,759,000	28.7	11,727,000	63.7	24,486,000	39.0
		AT GULF COAST PORTS					
1924		5,462,000	10.0	6,704,000	35.8	12,166,000	16.7
1923		4,133,000	9.4	6,157,000	33.4	10,290,000	16.4
		AT PACIFIC COAST PORTS					
1924		29,090,000	53.6	- - -	- -	29,090,000	39.8
1923		26,829,000	60.4	- - -	- -	26,829,000	42.7
		AT INSULAR POSSESSIONS					
1924		915,000	1.7	327,000	1.8	1,242,000	1.7
1923		682,000	1.5	538,000	2.9	1,220,000	1.9
		TOTAL					
1924		54,323,000	100.0	18,708,000	100.0	73,031,000	100.0
1923		44,403,000	100.0	18,422,000	100.0	62,825,000	100.0

domestic oil and that the deliveries at these ports still represent over 50 per cent of the total deliveries of domestic oil at United States ports.

LUBRICATION ON SHIPBOARD

An Open Forum—Questions on Lubrication Problems Are Invited; They Will Be Answered in Order of Receipt Through the Co-operation of the Associated Oil Company's Staff of Lubrication Engineers

INSTALLMENT No. 11

The page, Lubrication on Shipboard, is a scientific engineering service to ship operators. Send us your problems and we will find the solution. Proper lubrication is one of the most important factors in efficient operation at sea or on shore, and it enters into every relation of mechanisms in transportation in industry in life itself. This installment treats of B. S. AND M. TESTS, of COMPRESSOR VALVES, of THRUST BLOCKS, and of STEERING GEAR QUADRANTS.

Question No. 45.—What is the B. S. & M. test and what relation does it bear to the lubricating qualities of oil; also please explain how you go about it to get the results?

Answer.—B. S. & M. are the abbreviations of bottoms, sediment and moisture. B. S. and M. tests are not applied to lubricating oils and are only used on fuel. The process is noted as the centrifuge test because centrifugal force is employed to separate the substances of different specific gravities.

The product to be tested is poured into a graduated flask up to the 55 C.C. mark and then 50 C.C.'s of 90 per cent benzol at 100 degrees Fahrenheit is added. The mixture is shaken or stirred to dissolve all soluble matter. This fluid is then placed in a centrifuge tube, which is really a bottle about nine and one-half inches long, cone shaped at the bottom and the lower end of which is graduated. The neck is contracted like the neck of a vase and has a fill hole about one-half inch in diameter. Two centrifuge tubes are placed in the machine opposite to each other and they are whirled about at the rate of 1500 r. p. m. for a period of time, usually thirty minutes. This centrifugal force causes a separation of the liquids of different specific gravities, and the result is read from the graduated scale before mentioned. B. S. and M. is always read in percentages. Centrifugal separation accomplishes the same results as gravity separation but is more rapid and more certain.

Question No. 46.—The discharge valves of a 10 by 14 air compressor, which we are operating at 110 r. p. m. against 125 pounds air pressure, have been found to gum up badly and the ports in the valve have become clogged and plugged with a deposit which looks like soft rubber. We overhaul this compressor once a year and have found this condition each time. Is this the result of poor oil or too much oil? Would appreciate an explanation of this difficulty.

Answer. The carbonaceous deposits found in your discharge valves may be caused by the following reasons:

1. Too much oil,
2. Oil too heavy in viscosity;
3. Foreign matter drawn in through suction pipe;
4. Discharge pipe too small,
5. Insufficient cooling,
6. Neglect

First. An air compressor of the size mentioned and operating at 125 pounds pressure should not use over one pint of lubricating oil per day. Even this is stretching the point. Too much oil is sure to cause an accumulation of deposits, as foreign matter drawn in through the suction pipe adheres to the excessive lubrication.

Second. An oil of too heavy a viscosity is not suitable for the conditions mentioned. Air compressor oils should be of light viscosity and should conform to the ordinary specifications of lubricating oils for automobile engines. The proper viscosity for an air compressor such as you mention should be about 300 viscosity at 100 degrees F., and should be a light colored or pale oil. The heavy dark green and the red engine oils should be avoided in compressor cylinders.

Third. Foreign matter, such as dust, iron oxide, or rust and other solid matter found in the atmosphere and drawn in through the intake, will, as stated above, combine with the surplus lubrication and bake in the valve cage and gum up the valve stems. To eliminate such trouble, it is suggested that you cage in your suction pipe and filter your air through cloth or gauze screen wire, being careful to allow plenty of area so you will supply the cylinder with its full capacity of air.

Fourth. By bushing down the discharge pipe, undue pressure and excess heat are produced. In fact, this will tend to wire draw your air, which is always to be avoided. The manufacturer of the air compressor has provided a proper size pipe, and if any changes are made it will be better to increase instead of decrease the pipe in size.

Fifth. Improper provision for the cooling of valve cages causes the formation of deposits at this point owing to the production of heat. Often the water jacket becomes fouled up, the circulating water does not have an opportunity to perform its mission, and it is suggested that you make an inspection of the water jacket.

Sixth. The valves on an air compressor are generally very accessible for inspection and repair. It is recommended that all valves and especially the discharge valves be removed and cleaned at least once every month, which will only take a short time. The receiver should be provided with a drain for the action of oil and should be blown down every day. Broken springs, poorly seated valves, etc., cause wire drawing and are the direct cause of many air compressor explosions.

We hope the reasons set forth above may be of some assistance to you and do not mean to imply that all are the contributing causes to which you refer in your question.

Question No. 47.—Can the oil from the thrust block be reclaimed and used over again in the lubricators?

Answer.—Reclaiming the oil depends entirely upon what oil you are employing. If you are using a straight mineral oil, you can run it through your filter or centrifugal oil separator and use it over again; but if you are employing a compounded marine engine oil, this cannot be done because the animal or vegetable oils with which the oils are compounded tend to form permanent emulsions which defeat the reclamation of the oil.

Question No. 48.—The quadrant on the steering gear requires a lot of cup grease and the most of this falls on the deck. Can we find anything better than this to do the work?

Answer.—Cup grease is not the best lubricant for a quadrant because it is easily squeezed off by tooth pressure, and gravity, heat, and vibration do the rest. Would suggest a gear compound which is a very viscous mineral product and which contains no soap base. This gear compound clings to the metal surfaces and maintains a good oil film, which successfully resists metallic wear, and also one coating of which when applied hot lasts a long time. Metallic catchpans placed under the quadrant will prevent the lubricant from dropping on the deck and will aid you in keeping your vessel shipshape.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

OAKLAND LAUNCH & TUGBOAT COMPANY

ALL the cities situated on San Francisco Bay are vitally interested in water traffic. Not the least among these is Oakland. From this former substation for the metropolis, a great deal of freight now originates due to the tremendous increase in manufacturing industries now located there, as well as to the great increase of incoming freight in the way of overseas goods for food, clothing, and other needs for the fast growing population of that city.

About eighteen years ago a group of business men saw that Oakland would grow and that there would also be need for small craft, powerful but cheaply operated, to be used in towing and other work; also that a fleet of heavy barges would and could be advantageously employed. With this idea in view, the Oakland Launch & Tugboat Company was organized. A start was made with two small gas-powered boats, the Ione and Dixie. These, with a small barge, comprised the original fleet.

The foresight and confidence of these operators were justified. Business did grow, and grow rapidly. Heavier and more powerful boats were added. Experience taught the men at the head of things the right kind of craft to use in this work, and these were evolved, resulting today in a fine fleet of sixteen tugs and launches with a large tug on

order and now building at Brustar's Yard at Oakland.

Besides the powered craft, there are seventeen barges, ranging in capacity from 20 tons to 500 tons. It may be mentioned here that the Oakland Launch & Tugboat Company does not enter the freighting field as handlers of goods. They are carriers only. They will rent out a barge and its attendant towboat, but make no contracts to handle or carry goods themselves. By this system they steer clear of all rate wars, stevedore troubles, and damage suits, and are able to concentrate on the business they are engaged in to the advantage of their clients. All this has resulted in the building up of one of the most successful organizations of the kind on the Bay of San Francisco. They also have inaugurated a 24-hour service. Nights, holidays, and Sundays there are always boats and barges ready for call.

The management is at present in the able hands of A. E. Williams, who has been with the firm since 1912. "Al", as he is known to his host of friends, is a splendid executive; he is gifted with vision, and certainly has the tugboat and barge game down to a fine point. Never overlooking a chance to let a prospective client know that the company's service is of the best, he has a way of making each customer feel that the whole organization is for the time being engaged solely in for-

warding the particular interests of such customer. This makes friends. Also it is the policy of the company never to promise what cannot be performed. So when it has been definitely stated that a certain boat or barge will be on hand at a certain time, it is certain that boat or some other equally good boat or barge will be at the place designated.

C. W. Prydes is superintendent of the company and ably carries out that end of the work. As chief of staff he is the one who advises and leads the several crews, and being himself a most competent tugboat handler, can take hold, if necessary, and show just the way things should be done. These two men in control have gathered a splendid organization around them and have had little trouble in the way of labor disputes or turnover. In fact, there appears to be a sort of family feeling permeating the personnel, both in office and afloat.

The new tug now building will soon be illustrated in these columns. It may be mentioned that she will be fitted with one of the new 360-horsepower Fairbanks-Morse direct reversible diesel engines, a type that the builders believe will soon be generally adopted by workboat owners. At this writing the Oakland Launch & Tugboat Company have seven diesel-engined boats in their fleet, and from the remarkable showing made by these diesels in decreased fuel costs, it is probable



The towing fleet of the Oakland Launch & Tugboat Company lying in at the company's wharf, foot of Webster street, Oakland, California.

that the entire fleet will be dieselized as rapidly as practicable. Progress is the slogan of the company. And yet, with all the advance made,

they have been pressed for boats to such an extent that the two pioneers, *Ione* and *Dixie*, are still in active operation.

With the Rum Runner Chasers

THE swift, highly powered, gas-engine propelled craft known as rum-runner chasers, while they do not engage in the prosaic work of towing barges and other vessels, might rightly be called workboats. It is only within a few months that this type of craft has come into use, as part of the plan to enforce prohibition by stopping, as far as possible, the entry by sea of illegal liquors.

To discuss the question here of whether prohibition is right or not, would be entirely out of order, as this department of *Pacific Marine Review* aims to tell facts about workboats. A *Pacific Marine Review* representative happened alongside one of the now famous craft recently and had a chat with the commanding officer. Judging from the story told, these watchmen of the coast are workboats all right. They are kept going smartly, and have little time to lay up, for as yet there are not enough of them to fully guard the avenues through which slip the silent and speedy rum-runners.

The crew of these chasers consists of eight men, seven of whom are petty officers. When on station there is little or no rest for the crew. At night all lights are dowsed, for the rum-runner also does this trick. The consequence is that everyone is at all times on the alert. Microphones are constantly in use, to pick up the sound of propellers. Sharp lookout is kept for anything and everything. The engines are always tuned to the nth power, ready to start chase at an instant's notice. When the sea is smooth, or even fairly so, there is not a great deal of comfort on board, as the strain of continued watching is wearing. Then, again, the space is cramped and constricted, for these police of the sea were made for work, not fun.

But when there is a stiffish breeze, with a fair sea on, then things are lively aboard. Anything not nailed, bolted, or tied down will fetch away. And stomachs have to be drilled to stand the racket, too, for the average seaman will get desperately seasick on a runner chaser. The smell of the gasoline and oil, together with

the twists, bends, lurches, pitchings, rolls, bounces, slams, dives, nose and tail, separately and collectively or all combined in a cork-screw are enough to upset the hardest old salt that ever took a hitch at the waistband of his trousers. To eat is not possible, except in the way of something that can be held in the hand, for dishes will not stay where put, neither will they hold their contents. But watch must be kept, for it is this sort of weather that the rum-runner gets busy. If there is a good heavy rain or swirling fog, so much the better. It then becomes a war of wits and seamanship between the rum-runners and the waspish chasers.

And don't for a minute think that

the rum men are only gun toters and roughs. There are some of the ablest known handlers of small boats in charge of these craft. The profits are large, and those who finance such enterprises know well the value of brains and efficiency. So it is obvious that it takes a high class of effort to keep these chaps in check. That the little fleet of runner chasers which guard the shore line of California have done splendid work is well known. In fact, they have succeeded in putting a big crimp in the business of illegal liquor running, and the profits formerly so large are getting much less.

The writer will not repeat here what has already been well described concerning the size, equipment, power, armament, etc., of the chasers. He has only briefly attempted to picture in a few lines the nature of their duty, and respectfully contends that they can truly be called workboats. Ask the captain of one of them. He knows.

Boat and Engine Building Notes

The yacht *Spray*, owned by Adolph Sutro, is being rebuilt at the yard of W. F. Stone & Son, Alameda. Her eastern-built gas engine is being replaced by a 30-horsepower Standard. The owner has had considerable trouble with the old engine, and decided to replace it with a locally built machine.

* * *

Rhodes-Jamieson Company, Oakland, sand and gravel barge operators on San Francisco Bay, are having their tug *Valiant* re-engined by the Union Gas Engine Company, Oakland. A 150-horsepower full diesel engine of the builders' latest type is to replace a gas engine of the same make. Discussing the savings effected by the change, it has been proved that in quantity one-half of the number of gallons of heavy oil will be consumed compared with gasoline. With diesel oil at 4 cents and gasoline at 16 cents, a reduction of 75 per cent in fuel costs is the result. Also the losses in lubricating oil are materially lessened in the case of the diesel, all of 60 per cent being saved in this item. So that to scrap even a good gas engine and replace it with a diesel is fine business.

* * *

It is understood that the Standard Gas Engine Company, Oakland, will soon be on the market with a diesel

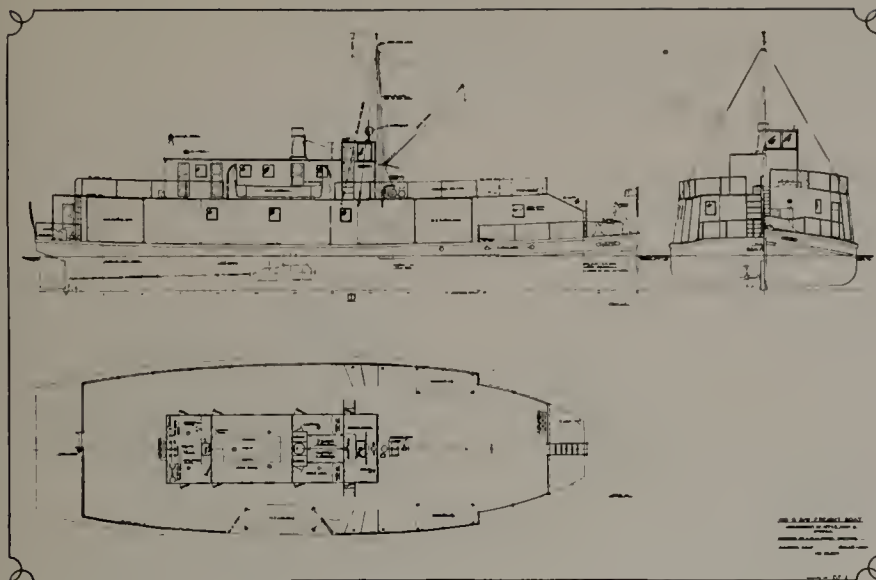
engine. This firm, well known for its conservatism, has delayed putting out a diesel engine until such time as the machine has been found of the best type in every way. The results sought are now practically accomplished, and a Standard diesel will be a fact at an early date.

* * *

The Bay Development Company, San Francisco, are having a 110-horsepower 3-cylinder Union diesel engine installed in their tug *Wm. Fisher* to take the place of a 75-horsepower gas engine. The results expected are a considerable increase of power and of operating radius, together with great lessening of fuel and lubricating oil costs.

* * *

Hunt-Hatch Company of Oakland operate four workboats from San Francisco Bay to points on the Sacramento and San Joaquin rivers, carrying farm and garden produce. At this season spring vegetables form the principal loads, and heavily laden boats come down to the Bay from the delta region with cargoes for the canneries. A few weeks ago the river freighter *Surprise* was refitted with two 100-horsepower diesel engines of Union manufacture, to replace two 60-horsepower gas engines of like make. An asparagus grower recently asked the engineer of the *Surprise* if the new engines



Outboard profile and deck plan of the shallow draft motorship *South Shore II*, built by the A. W. de Young Boat & Shipbuilding Company of Alameda, for shallow draft freight service on San Francisco Bay.

were of the electric type. The engineer wanted to know why the question, and the asparagus rancher said, "Well, she goes along pretty lively now, and don't make any smoke or noise, and I had an idea she was electric drive." So even the bucolic farmer notes the difference between a smooth running and smokeless diesel and a violently explosive and stinky gas power plant.

* * *

Things are humming around the shops of the **Western-Enterprise Engine Company** on Alabama street, San Francisco. Tests were being made recently, while a *Pacific Marine Review* representative was present, of the new engines for the **Union Oil Company of California's** new steel oil carrier building at **Moore Dry Dock Company**, Oakland.

Besides this work, several other jobs were in hand in various stages of completion. Among them was a new 100-horsepower diesel engine being built to replace the present gas engine of the trawler *Jefferson*. The **Standard Fisheries Company** of San Francisco, owners, determined on the change after their steam trawler *E. Antoni* had been dieselized by the **Western-Enterprise**. A full account of the latter appeared in the February issue of *Pacific Marine Review* and should be of interest to operators.

* * *

The name **Worthington** has for many years been synonymous with good pumps. Ask an old time engineer what **Worthington** means, and he will most likely reply, "Pumps,

and mighty good ones." However, this great company has now embarked on the manufacture of diesel engines, which will also be built with due regard to the reputation of the firm. In the larger sizes, previously mentioned in *Pacific Marine Review*, the 2-cycle, double-acting type has been adopted. These have proved to be of a kind to be expected from a firm like **Worthington**.

Lately, however, the company has put on the market a smaller type. It is a 2-cycle, single-acting engine with solid injection and practically valveless. Reversible gear is one of the main features specially brought out. These engines also have oil-cooled pistons, being the first and only ones of this kind manufactured in the United States. Powers of from 120 horsepower with 4 cylinders to 450 horsepower with 6 cylinders are now available. Weights range from 26,500 pounds to 88,000 pounds. All the most modern arrangements of forced feed lubrication, ease of overhauling, close speed regulation, etc., have been well worked out.

Worthington Pump & Machinery Corporation have branches in twenty-four cities and will be pleased to give all information possible on the different features to anyone interested. A. R. Thorson is the San Francisco representative. The company's bulletin, No. 1857-A, shows all details very clearly, and is available to operators of engines of any kind.

A letter from A. W. de Young of the **A. W. de Young Boat & Shipbuilding Company** of Alameda, sent from Holland, where he is visiting, makes mention of conditions existing there as regards shop work, etc. He says that the percentage of hand labor in manufacture is 60 per cent greater than in this country, while wages are about on a par with ours. While the work turned out is of excellent quality, he does not see how those countries can compete with us in machinery. Their system of seven years' apprenticeship is still adhered to.

Mr. de Young has visited all the principal shops in Sweden, England, Germany, and Holland, observing methods of construction. Steam engines are practically obsolete in these countries for small powers, and many different types of diesels are made. He says that the *Kromhout*, built in Stockholm, is about the best. It has few moving parts, is highly efficient and very mobile.

Mr. de Young speaks in his letter of a 27-foot yacht, built by a friend of his in Stockholm, that has taken all prizes in races lately. Something new in the design of the body is said to be the reason. Mr. de Young will return to his Alameda yard about the middle of May and no doubt will have many new ideas derived from his trip.

The **South Shore Port Company** of Mountain View are contemplating a new and larger boat to supplement the one now nearing completion at the de Young Yards, which has been described in our columns. This trade is increasing so rapidly that another boat must be had. So the workboats build up business.

* * *

The shops of the **Pacific Diesel Engine Co.** at Oakland are starting work on the new 2900 horsepower engines for the **United States Shipping Board**. The heavy bed-plates are cast and several of the cylinders are out. The large overhead crane will be raised five feet to accommodate the height of the new jobs. This plant is busy also on the order recently closed by the **United States Shipping Board**, for 22 engines of 150 Brake horsepower each, to be used to drive electric generators for auxiliary power on the motorships to be produced under the Board's conversion program.

AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

NEW ELECTRO-HYDRAULIC STEERER

THE American Engineering Company of Philadelphia has added to its line of marine auxiliaries the improved type of electro-hydraulic steerer illustrated herewith. Developed entirely within the organization, this steerer represents the combined ideas of some of the best marine engineers in America today.

This is distinctly a steerer for moderate sized motor or diesel driven craft, such as yachts, houseboats and tugboats. The entire gear is a self-contained unit, complete in every respect, ready to bolt into place. It takes up but little space, the height is 20 inches, the width 39½ inches, and length over-all from centerline of cross-head 52 inches.

The cast-steel cross-head, bored to suit any stock diameter up to 5 inches, is included as shown. A split cross-head can be furnished at slight additional cost. A bronze companion drum, grooved for ¾-inch wire rope, is furnished unmounted for the pilot house.

The prime mover consists of a 2-horsepower, ball-bearing, marine type, electric motor, constant-running, connected by a flexible coupling to a Hele-Shaw variable stroke hydraulic pump. Its operation is practically noiseless.

A change in direction of rotation

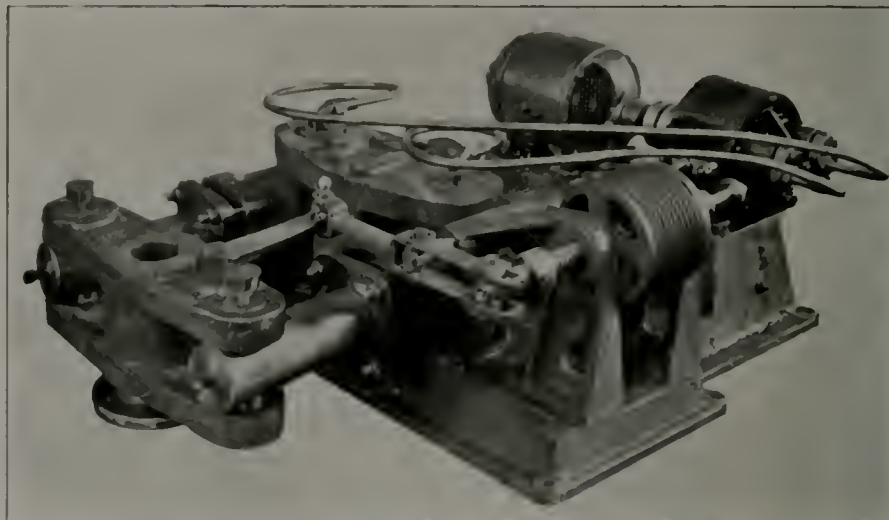
on the rope-drum reverses the flow of the liquid (oil under pressure) in the system, thereby reversing the operation of the rams and connections to the rudder. This reversing of the flow is accomplished in the pump proper without resort to outside means.

When the steering wheel is at rest, the pump is in a neutral position and although rotating delivers no liquid, hence the rudder does not move. There is incorporated in the gear a follow-up mechanism which automatically brings the pump to

neutral whenever the wheel is brought to rest, thereby preserving the rudder angle, port or starboard, in synchronism with the wheel.

The steerer will deliver proper rudder torque for any boat having a steel rudder stock up to and including 5-inch diameter, and is designed to swing the rudder 45 degrees from midship to hard-over in either direction.

Delivered ready for installation, the electro-hydraulic steerer No. 45 weighs 2600 pounds.

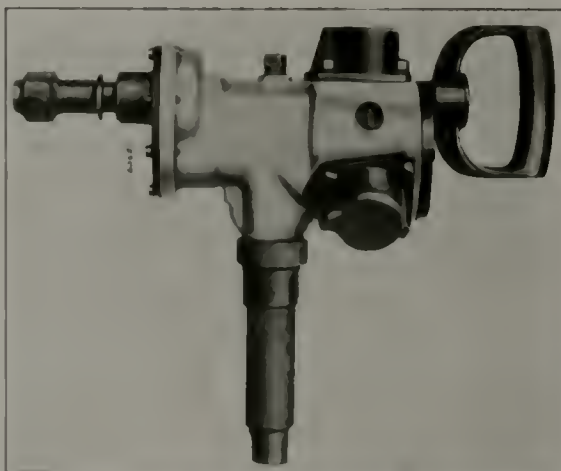


A self-contained electro-hydraulic steering unit, recently developed by the American Engineering Company.

WOOD BORING MACHINE

A NEW size, light weight, reversible, pneumatic, wood boring machine has been brought out by the Ingersoll-Rand Company, 11 Broadway, New York. This new drill is known as Size DD and is suitable for wood boring up to 1 inch diameter holes.

The construction of this machine is similar to that of the other three cylinder drills which this company manufactures. The features of this type of machine are briefly; special three cylinder motor; light-weight aluminum case, with steel bushings



Size DD pneumatic wood-boring machine, recently brought out by the Ingersoll-Rand Company.

cast in place in all the bearing holes and the throttle hole; renewable crank pin sleeve; and cast iron cylinders which are renewable and interchangeable. The renewable cylinders are a valuable feature, as any cylinder after long service, may easily be replaced and the motor made as good as new at slight cost.

The three cylinder motor has the rotating parts all accurately balanced, eliminating vibration and reducing wear and tear.

Size	DD
Weight	15 pounds
Average working speed	705 r.p.m.
Length of feed	2½ inches
Wood bit capacity	1 inch
Length over all	15 inches
Side to center of spindle	1 9/16 ins.
Size hose	½ inch

CONSTRUCTIVE, PRODUCTIVE PUBLICITY

In no branch of human endeavor are the benefits of hearty cooperation so immediately apparent as in the modern art of technical publicity.

A striking example of intelligent cooperation is shown by the illustrations used on this page. The upper picture is a reproduction of an excellent advertisement which appeared in the February issue of Pacific Marine Review, the National Magazine of Shipping.

The lower illustration shows the front of the San Francisco branch of Chas. Cory & Son, Inc., probably the best known manufacturers of communication equipment in marine use. For some time back, J. A. Lalor, the manager of the San Francisco branch of Chas. Cory & Son, Inc., has been using these page advertisements in Pacific Marine Review in the manner indicated in the illustration. In each window is pasted an

advertisement, each advertisement relating to some particular specialty of the Cory line. Below the advertisement on the show space of the window are displayed the various fittings and equipment described in the advertisement.

Mr. Lalor is authority for the statement that this method attracts to the display in the window and to the advertisement a very unusual degree of attention and has resulted in considerable inquiry and not a few sales.

The display shows that the Cory organization are always alive to every opportunity for advancing the sale of their products. The name Cory has come to be quite synonymous with the lability and proven worth on any marine apparatus whereon it is imprinted, and Pacific Marine Review is proud of the prominence given to its publicity effort on behalf of this firm.



New Cory Products for Diesel Equipment

A New Telegraph
The Cory Hooter Telegraph Indicator is designed especially for Diesel engine vessels, and contains a Hooter that is unmistakable and can be heard above noises of Diesel engines. This indicator can be used with present transmitters, and installations can be effected during turnaround of a vessel.

Cory Pressure Alarm System
The Cory Pressure Alarm System developed for Diesel ships and the Navy, is for use on pressure lines such as fuel oil, water, air supply, etc. An alarm will immediately be automatically sounded if the pressure falls below that which has been predetermined, thereby eliminating the necessity for constant attention.

CHAS. CORY & SON, Inc.

Cory Service

"The World's Largest Manufacturer of Marine Telegraph, Hooter, and Alarm Equipment"



MONEL METAL

THE natural alloy of nickel and copper, mined, worked, and marketed by the International Nickel Co. under the name of Monel Metal, has in recent years assumed a very important position in the list of useful industrial materials.

This natural ore is mined in the Sudbury District of Canada. Its metallurgical treatment is technically controlled, but no attempt is made to alter the approximate ratios of nickel and copper found in the original ore, which usually runs very close to 67 per cent nickel, 28 per cent copper and 5 per cent of various other elements.

Monel metal is readily worked. It can be machined, forged, welded, brazed, soldered, spun, drawn, stamped, and polished with practically the same ease of manipulation as would maintain with mild bronze or the better grades of brass. It is now produced and marketed in the form of ingots, shot, bars, rods, sheets, wire, and castings and is also fabricated into many forms. In strength properties it compares very favorably with mild steel, and with this strength it combines physical and chemical properties which make it less subject to corrosion than almost any other metallic substance on the market.

The technical set-up for machine shop practice in working Monel metal has reached a standardization phase, and it is now possible to provide specifications for cutting tools showing proper methods of grinding to give correct clearances, angles, rakes, and slopes for the cutting edges of all tools used.

Monel metal may be forged under the hammer with the same facility as nickel steel. Monel metal is easily welded by any of the modern welding methods, the practice in welding being very similar to that for low carbon steel. It can be soldered or brazed as easily as copper, using the same fluxes.

Made up into screws, rivets, nails, nuts, bolts, and various other forms of fastenings, Monel metal is being extensively used throughout passenger accommodations on many American vessels. It is taking the place of brass, copper, and nickel in motorboat trimmings. It is finding its way into the engine rooms of many motorships and steamers in the shape of piping, fittings, valves, and various trimmings and facings on engine details. This non-corrosive

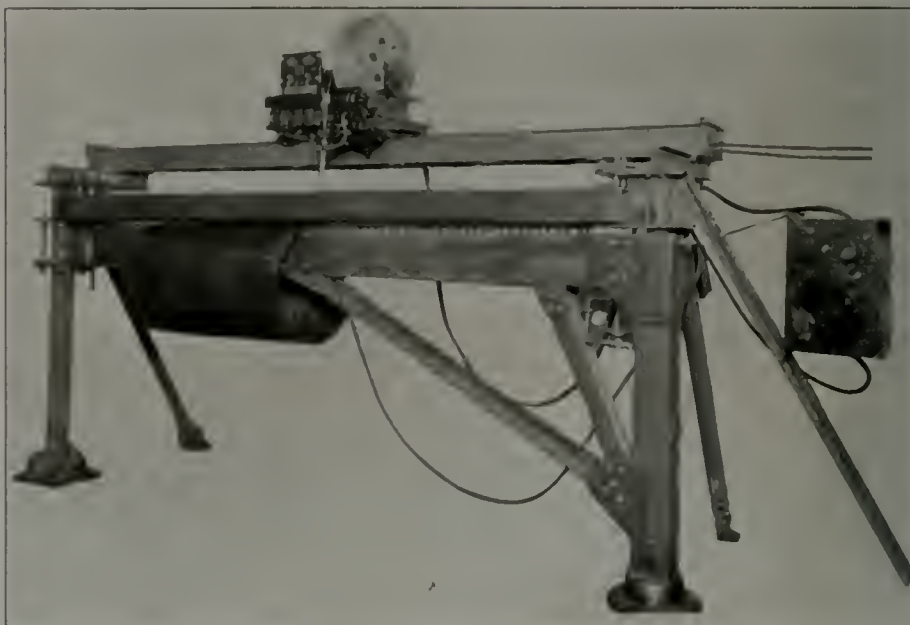
material will also be found ideal for pump rods and pump valves.

In galley equipment Monel metal provides an ideal material for coffee urns, facings for steam tables, and for dish washing machinery. Manufactured into wire cable, it gives perfect service as tiller rope and as standing rigging for small and large ships. Monel metal is particularly valuable in window screens, and especially so on the small windows usual on shipboard. Here its gray-white color presents a very attractive appearance at door or window and allows greater admission of light and consequent im-

provement in interior illumination.

Monel metal is manufactured exclusively by the International Nickel Company and is fabricated and worked into various forms by many distributors.

The Pacific Foundry Company of San Francisco are sole agents for California and are prepared to offer prospective users of Monel metal the services of a modern research department maintained by the International Nickel Company and a long experience of their own in the solution of all industrial corrosion problems.



New automatic welding machinery recently developed by the General Electric Company

G. E. Automatic Welders

FOLLOWING several years of development and trial, the General Electric Company is now marketing a line of automatic arc welding equipments. These equipments, sold either as complete units or as separate parts, have been especially designed for quick, efficient, and economical welding where quantity production is a factor. Heretofore it has been the custom to supply the separate parts only.

The new outfit is expected to find its principal application in the construction of such standard products as tanks, boilers, cans, axle housings, and pipe, and also for repairing undercut shafts or axles and building up sharp flanges on car

wheels. Its field of greatest usefulness will be in the manufacture of storage vessels where the static load is not greater than 10 pounds per square inch and where the thickness of the metal to be welded is not less than No. 16 gauge.

Outstanding among the advantages claimed for these automatic equipments is the resulting increase in speed production following their installation. Estimates by General Electric engineers, based on actual production, show that this increase in speed is especially marked when comparison is made between the automatic arc welder and either hand arc welding or hand gas welding. A complete outfit can be operated by

a man and helper, while the completion of an equal amount of hand work in the same time would necessitate the use of four or more men. Estimates also indicate a lower overhead expense than with gas welding, excluding the item of labor. The use of pushbutton control provides simplicity and ease in operation. Uniformity of finished product and space saving by the reduction of the number of workers and quantity of stock on hand are among the other

advantages claimed for this equipment.

A complete outfit consists of an automatic welding head and control panel, travel carriage and clamping device. Where it is desired, in order to meet special circumstances in any plant, the travel carriage and other component parts of the equipment may be assembled by the purchaser with his own device for holding the work.

Trade Literature

Westinghouse Apparatus for Marine Application is the title of a 528 page book just issued by the Westinghouse Electric & Manufacturing Company. This book is the first of its kind ever issued by any manufacturer on the application of mechanical, steam and electrical apparatus for marine application.

In addition to a complete description of the diesel-electric, turbine-electric, and turbine-gear drives and apparatus built by the Westinghouse, this book contains complete mechanical, steam, and electrical data which are of special interest to the engineering and chief operating personnel of the marine industry.

The comprehensiveness of this book is best suggested by the index of 23 sections, which are as follows:

Section 1, Useful notes on navigation and steamship; 2, Trade information; 3, General tables; 4, Mechanical data; 5, Fuel and lubrication; 6, Steam data; 7, Electrical data; 8, Spare parts; 9, Propulsion equipment; 10, Generating equipment; 11, Steam condensing equipment; 12, Switchboard equipment; 13, Distributing equipment, insulating materials, and supplies; 14, Deck auxiliaries; 15, Engine room auxiliaries; 16, Equipment for shipyards and docks; 17, Electrical appliance, fans, and lighting equipment; 18, Galley, bakeshop, and repair equipment; 19, Radio equipment; 20, Electric dredging equipment; 21, Drydock equipment; 22, Government equipment; 23, Marine service.

From a brief survey, it appears that this publication will become a much used reference book for the marine industry. There is no text book in existence at the present time that contains all the data published in it.



G. H. Froebel, manager of the Westinghouse Marine Department, under whose direction and inspiration this book was compiled, deserves a great deal of credit for originating this publication for the marine industry.

Wheeler Evaporators, an attractive 32-page catalog distributed by the Wheeler Condenser & Engineering Company of Carteret, New Jersey, presents an informing discussion of apparatus for the production of distilled water for boiler feed make-up.

The fitting of evaporators into power plant heat balance and the relation of the evaporator to other heat balance equipment is discussed, and various types of hookups are illustrated by the heat balance diagrams of representative stations.

The operating characteristics of four types of evaporators are de-

scribed, two of which are film evaporators in which evaporation takes place from a falling film of liquid produced by showering the water over the tube nest, and two are submerged tube evaporators.

A film type evaporator in which the evaporating surface is composed of return bend tubes is recommended for large multiple effect, low or medium pressure installations, while for smaller installations the Ellipticoil film evaporator in which, to facilitate scale cracking, the tubes are shaped like two joined Bourdon gage tubes, is available.

An evaporator with Ellipticoil tubes and similar to the Ellipticoil film type evaporator except that the tubes are submerged, is also used in low and medium pressure installations, where submerged tube operation is desirable.

For very high pressure installations, there is the Wheeler Contraflo submerged tube evaporator. Other topics of interest are the advantages of distilled boiler feed water and the relative economy of multiple effect operation as affected by the number of effects and the direction of liquid flow.

The thirty-third edition of **Hendricks Commercial Register** is now off the press and ready for distribution.

This marks an epoch in business reference media in that it physically manifests the result of almost thirty-five years of painstaking endeavor plus a modernization of methods which will best serve industrials who wish to purchase in the most efficient and economical way.

It is a huge volume, yet it is compiled typographically in such manner as to contain the maximum amount of information without being unwieldy, and making it the most complete directory of the products of American manufacturers in existence.

Hendricks Commercial Register enjoys a wonderful prestige among the men who buy or specify in manufacturing or jobbing concerns in all lines as well as among contractors, architects, engineers, and others.

Hendricks Commercial Register is published from 70 Fifth avenue, New York, and 18 East Huron street, Chicago; price \$12.

Worthington Pump and Machinery Corporation, 115 Broadway, New York, has issued bulletin on **Worthington Centrifugal Pumps Serving Every Industry**, W-607. Copies may be had by applying to any of the branch offices of the company in the principal cities of the United States.

Engberg Vertical, enclosed, self-oiling Engines is the title of Catalog No. 302 issued recently by Engberg's Electric & Mechanical Works, St. Joseph, Michigan.

Every purchaser of engines should be vitally interested in the following factors: Initial cost, operation, maintenance, dependability, length of life, responsibility of manufacturer; and with these points in view the Engberg company has issued their catalog setting forth the above qualities embodied in their 1 to 100 horsepower self-oiling engine.

Burmeister & Wain, Ltd., Copenhagen, Denmark, shipbuilders and manufacturers of Burmeister & Wain marine diesel engines, has recently issued a very interesting booklet describing some of the advantages of their marine diesel engine. This is a 30-page booklet of convenient size, bound in brown card board. A list of motorships of various flags equipped with Burmeister & Wain engines is given in this booklet, together with a list of manufacturers licensed to build this type of engine. Considerable general information concerning the shipbuilding activities are set forth, as well as a number of very good photographic reproductions of motorships and their Burmeister & Wain power plants.

Morse Dry Dock & Repair Co., Brooklyn, N. Y., recently issued a catalog containing a great deal of interesting data relative to fuel oil burning, together with a description of the various units of the **Morse Fuel Oil Burning System**. This system is called the Morse Venturi method of mechanically atomizing fuel oil for combustion, and the book is profusely illustrated with graphs, tables, and photographs of the many types of installation possible with this system.

Falk-Bibby Flexible Couplings, Bulletin No. 35, issued by The Falk Corporation, Milwaukee, is an 8-page leaflet describing and illustrating these couplings in designs for

every purpose and speed, ranging from 1/3 to 20,000 horsepower at 100 revolutions a minute.

We have received from the Board of Harbor Commissioners of the City of Los Angeles their Annual Report for the fiscal year July 1, 1923, to June 30, 1924. This is a 104-page book containing the history, development and potentialities of the port of Los Angeles, containing many interesting illustrations, graphs, and tables.

Refractories and Furnace Design is a 36-page booklet, bound in blue cardboard, published by the **Plibrico Jointless Firebrick Company**, Chicago.

The booklet analyzes the cause of furnace trouble and presents a solution of the furnace problem, backing its arguments with convincing tests and records of performance. The application of Plibrico jointless fire brick to all of the various types of boiler furnaces in common industrial and marine use is described in great detail, and many practical instructions given for better methods of application and for the saving of money by the use of standard tools and forms. Many typical installations and settings, using Plibrico, are described and illustrated, and a convenient graphical specification for various boiler types is displayed.

This booklet is for free distribution to all interested parties from the general offices at Chicago or from any of the branches.

The American Spiral Pipe Works has issued Catalog No. 24 on **Forged Steel Pipe Flanges**, forged tubular products, seamless rolled steel rings, corrugated boiler furnaces.

This is a very well made up catalog of 84 pages and contains a comprehensive array of valuable information regarding corrugated steel furnaces for internally fired boilers. It contains many graphical illustrations and formulae and tables of working pressures permitted by United States Steamboat, the American Bureau, and Lloyd's requirements. Many of the tables are new and hitherto unpublished.

This will be found a most valuable handbook for engineers, operators, and shipbuilders, and copies may be had free of charge by applying to the American Spiral Pipe Works, Chicago, or 50 Church Street, New York.

Bridgeport Brass Company, Bridgeport, Connecticut, and with branch offices at New York, Detroit, Philadelphia, and Chicago, have issued **Bridgeport Data Book No. 16**.

The book contains prices and weights of sheet brass, brass rod, wire, condenser tubes, and seamless brass and copper tubes. It will be sent free to anyone interested in receiving the same.

Uehling Instrument Company, Paterson, New Jersey, has ready for distribution Bulletins Nos. 118 and 118-A. These describe in detail, with graphical illustrations, the Apex CO₂ Recorders for various applications (Bulletin 118) and Apex Pneumatic CO₂ Meter-Principle of Operation (Bulletin 118-A). These bulletins are made up in loose leaf form, with holes punched for ready filing with other bulletins sent out by this company on their products.

The City and Port of Astoria has issued in very attractive booklet form the Annual Review of shipping, manufacturing, and development of the Lower Columbia River District. This is a 64-page booklet, bound in light brown cardboard. It contains a description of the port of Astoria, its development and future prospects, and the present facilities and equipment. Astoria is located at "the gateway to the Columbia empire" and the booklet therefore contains an outline of the many industries—lumber, agriculture, and commercial—which are making this port the outlet for distribution.

The Port of Charleston, South Carolina, is the title of a comprehensive handbook recently issued under the supervision of Roy S. MacElwee, Ph. D., and Henry F. Church of the Bureau of Foreign Trade and Port Development of that city.

Besides the customary description of the present port facilities, records of tonnage handled, and other statistics characteristic of all year books, this volume contains some very interesting and attractive sketches of characteristic Charleston scenes, as well as a brief outline of the founding of the city of Charleston in 1670 by a group of English colonists on this natural harbor.

HIGHEST POWER RADIO ON COAST GUARD CUTTERS

AS a result of the invention of a high-power, low-voltage thoriated tungsten filament tube, the Coast Guard cutters Tampa and Modoc put to sea recently equipped with the highest powered telephone and telegraph radio transmitters carried by any ship flying the American flag. Each ship has a 2-kilowatt telephone-telegraph transmitter and, if the regulations of the service permitted, they could easily be used as floating broadcasting stations greater in power than most of the licensed land stations.

The Tampa and Modoc left the Boston Navy Yard detailed to patrol the ship lanes of the North Atlantic to protect shipping from

the menace of icebergs. These floating radio stations, both with the same call letters, NIDK, are in reality international, for the cost of the operation of the patrol is shared by the leading maritime powers of the world, as provided in the London agreement signed January 20, 1914, at the International Conference on the Safety of Life at Sea. This conference was the outcome of the sinking of the Titanic with appalling loss of life after striking an iceberg on the night of April 14,



Partial view showing tubes of the new 2 kilowatt radio transmitter recently developed by the General Electric Company and installed on the Coast Guard cutters Tampa and Modoc.

1912. As a result of this conference the United States was asked to undertake the responsibility of the ice patrol in the North Atlantic.

The success of this service is vitally dependent upon adequate radio facilities, and it was for the purpose of providing a dependable, long-range, high-powered transmitter that the Coast Guard headquarters commissioned the General Electric Company to develop a transmitter especially for this work.

Many unusual factors had to be

considered in meeting the Coast Guard requirements. For example, the set, although high in power, had to be so compact that it would fit in a small radio room. Due to its compactness, the voltages generated were required to be kept down to a minimum and the panels to be all of the "dead front" type, so that the operator would not be exposed to dangerous voltages if thrown against the set during a heavy sea. Factors of strength, reliability, and simplicity of tuning had also to be considered. It was further necessary that the emitted wavelength or frequency should be absolutely independent of any variations due to the rolling and pitching of the ship. All these requirements were met in the equipments now aboard the Tampa and the Modoc.

The first and greatest problem in meeting these needs was the development of a high-powered, low-voltage vacuum tube. Available at the time were low-voltage tubes using up to 2500 volts direct current obtained from a motor generator, and high voltage tubes operating on 10,000 volts or more of direct current. Providing the latter voltage on shipboard would have required the use of a motor generator set, a step-up transformer, a rectifier with two or more kenetron tubes, and an elaborate filter to smooth out the ripple in the rectified wave. Specialists in the research laboratory of the General Electric Company concentrated on the problem and produced the new and largest low-voltage tube, known as Model UV-851, which is rated at only 2000 volts on the plate and is four times as powerful as the previous low voltage tube. Its output is 1000 watts.

The 2 kilowatt transmitters of the Tampa and Modoc provide communication by means of pure continuous wave telegraph, tone modulated telegraph, and telephone. The tone modulation, known as "sine wave" modulation, gives a pleasing, clear musical tone, easily read through static and interference. The tone is provided by an interesting little motor generator with an output of one-tenth of a watt. This output is so amplified as to control the grids of the vacuum tubes and thus modulate the whole output of the trans-



U. S. Coast Guard cutter Tampa

mitter. The ice patrol warnings, while reaching much farther than they ever did before, will no longer be a cause of interference with commercial traffic and broadcast entertainment, and, under favorable con-

ditions, it is expected that direct communication will be made with headquarters in Washington.

The Coast Guard Service is keeping in the van of all new developments which may benefit its work.

Both the Tampa and the Modoc are electric-drive ships of the latest type and are equipped with every kind of measuring instrument needed for their important work.

RADIO TELEPHONY BETWEEN SHIPS AT SEA

By CHARLES E. MAASS

THIS is a nontechnical article to illustrate the vast strides made in marine radio telegraphy and telephony in the past few years. The article is written from the ship operator's viewpoint, and all instances mentioned are from actual experience.

Until about four years ago there was no real improvement in radio installation ships of the merchant marine. All ships were equipped with either what was known as the spark or arc transmitters. The spark transmitter was of the type invented by Marconi, with the improvements that were being perfected from time to time. The arc transmitter, however, was of a different type entirely. Poulsen was the inventor of the arc, and it was well known for its easily copied signal and also for the great distances obtainable. However, the arc was not so successful on the wavelengths used by ships, and consequently a higher wave had to be used by ships are equipped.

Then the tube set came into being, and with it the wireless telephone. Now the wireless telephone had been used successfully in shore stations and by the Army and Navy for quite some time, but was comparatively slow in reaching installation on ships of the merchant marine.

The big advantage in the tube transmitter is not only the use of voice, but also the signal emitted is the same as that of an arc set when running properly. The tube set does not need constant care to keep the note perfect. To an operator copying signals, a perfect copying note is half the battle. The sound in the receivers of the tube transmitter is like that of a high pitched whistle. Then, too, the tube set works equally as well on low wave lengths as on high waves.

It is by the use of different wave lengths, or frequencies, that it is possible for more than one radio set to transmit at the same time and not interfere with each other. By frequency, I mean the number of vibrations per second. If two pianos, for example, were in the same room, and



200-watt E. T. 3602 telephone and telegraph radio transmitter of the Radio Corporation of America.

a note struck, or set into vibration, on one piano, the string of the same frequency in the other piano would vibrate of its own accord. Thus we say both frequencies were the same, or in tune. I merely state this so that the rest of the article may be more clearly understood.

In the spark type of apparatus the signal sent into the air by the transmitting station is very broad. This means that, if two ships or transmitting stations were quite close, difficulty and sometimes the impossibility of tuning out the interfering station means holding up of messages, or an excess amount of profanity on the part of the operator interfered with

The wave sent out by a tube transmitter is very sharp, and it is possible for two ships so equipped to be

within sight of each other and be working different stations without bothering each other, a feat usually impossible with spark sets. However, for distress signals or calling a ship to get into communication, this sharpness would be a hindrance; so a small wheel, like the commutator on a motor, is rotated at high speed. This breaks up the transmitted wave and broadens it a bit so that communication may be established, and then the operators can cut out the rotating wheel, known as a chopper.

One decided advantage of the tube transmitter is that a lower amount of power put into the aerial will give greater distance than will a larger amount of power on a spark set.

Then comes the advantage of using the voice over the same set. By throwing a switch the tube set is changed from a telegraph to a telephone set. The use of voice is accomplished by what is called modulating the output wave. In plain words, the whistle that is emitted into the air by the set is broken up before going out into the air by talking into a telephone (microphone). This means that at the receiving end the operator, when properly tuning his receiving set, hears the voice currents the same as they are spoken into the microphone at the sending end.

There are about sixteen of these sets installed on ships of the merchant marine on the Pacific Coast at the present time. The number of installations are steadily increasing. The H. F. Alexander, Matsonia, Maui, City of Panama, City of San Francisco, and several oil tankers are among those already wireless telephone equipped.

The tube sets are made by the General Electric Company for the Radio Corporation of America, who install and service them.

A brief description of the set follows.

There are two types, 1000 watt and 200 watt. Both of these are the same except for size of tubes and

their power. The rest of the set is practically the same in each case.

The 200 watt set requires 1000 volts direct and 88 volts alternating current, which is obtained by a 6-bearing motor generator running from the ship's current. The motor generator is usually placed in a box outside the radio room or in the engine room.

The tubes that do all the work in the transmitting set are identically the same as those in the radio receiving set seen in many homes except, of course, much larger.

In the chart room of the ship is placed what is called a remote control station. This station is for using the wireless telephone from the chart room. If the captain, for example, wishes to talk by wireless telephone to the captain of another vessel similarly equipped, he rings the "ring" button on the remote the operator on watch by pressing control box. The operator then gets into communication with the desired vessel by using the telegraph wave. Then the operators on both ships, after having established communication in this manner, change to a higher wave length to minimize interference, and test by voice. After voice communication has been clearly and satisfactorily established by both ships, the set is ready to be used by the remote control station. The captain is notified that communication has been established and the set is all ready.

The captain throws the switch in the chart room to "send" and talks as he would over a land telephone. After completing his talk he throws the switch to "receive" and he then hears the reply from the other vessel. At the present time there are no ships on the Pacific Coast equipped with what is known as duplex transmission, whereby talking and listening, as on the land phone, is possible. Consequently the person talking must complete what he has to say before receiving his reply.

While the remote station is being used, the radio operator merely keeps the apparatus in proper control by keeping the meters at their proper readings.

Another advantage of the remote station is the use of the remote control as an ordinary telephone line between the chart room and the radio room. The chart room can also, when the switch is in the proper position, hear signals ex-

actly as they are heard by the radio operator. This helps out the navigating officer, to a considerable extent, as he can get his radio time signals direct for the checking up of the chronometers.

A photograph of a 200 watt ET-3602 Radio Corporation of America telephone and telegraph transmitter is shown with this article. It should be noticed that all controls are within easy reach and that the set is very compact. The complete front panel is of metal construction and very rugged and durable. These sets are very efficient, easy to operate and keep in order, as well as being very easily read through atmospheric, known as static.

Because of the fact that the tube set minimizes interference to a very great degree, it is my opinion that the time is not very far distant when all ships shall be tube equipped, thereby speeding up the hand-

ling of ship-to-ship and ship-to-shore traffic.

In a test on the motorship City of Panama while in Central American waters, a very successful conversation was carried on at a distance of 350 miles with the Coast Guard cutter Mojave. This test was made at 11 a. m., using a 200 watt installation. It is a well known fact that wireless signals increase in strength and carry much further at night time; and so, considering the distance, the use of the voice, and the time of day the test was made, really very good results were shown, especially so when the Mojave reported the voice perfectly clear and loud. Many more such results, of equally good distances, were accomplished, which speaks very favorably of the wireless telephone for use on board ship. In fact, the wireless telephone is now a proved success, not only ashore, but afloat.

Book Review

The Sea, The Ship, and The Sailor. 373 pages, printed with 12 point Caslon type on Warrens Old Style wove paper, with 32 full page plates and ship end-papers, strongly bound in dark blue linen. Edition limited to 1250 copies; published by The Marine Research Society, 161 Essex street, Salem, Mass. Price \$5 postpaid. Also published as a special edition, limited to 97 numbered copies, printed on American vellum and bound in English linen with French marble-paper sides and parchment corners. Price \$10 postpaid.

This volume forms publication No. 7 of The Marine Research Society, of Salem, and is composed of five remarkable personal narratives of adventure at sea a century and more ago. Two of these narratives are published here for the first time from recently discovered journals.

First of these new narratives is that of John Bartlett, Boston sailor, who cleared on ship Massachusetts in 1790 for Canton and the Northwest Coast of North America. It comprises adventures with the savages in Hawaiian Islands, the killing of sea lions on desolate Kerguelen Islands and whaling in the Mozambique Channel.

The second new journal is that of Captain Knights of the Salem brig

Spy, who carried on a deal of bartering for beche-le-mer and tortoise shell with the islanders of New Zealand and the Malaysian archipelago in 1832 and 1833.

The other three narratives are:

That of Captain Barnard, who was deserted in 1812 with four men of his crew on an uninhabited island among the Falklands and led a Robinson Crusoe existence for nearly two years on various islands in the South Atlantic and Pacific.

That of John Nicol, running from 1770 to 1800 and showing the reaction of a British seaman to the American Revolution. He sailed with Captain Portlock to the Northwest Coast and had many unusual experiences.

That of William Mariner, which is probably the most interesting tale of all, as he was for five years a captive in Tonga Island from 1805 to 1810, and has many interesting reflections on the customs and manners of the natives.

Thirty-two full page plates, mostly reproductions of rare engravings and photographs from museums and private collections, illustrate this volume, and help greatly to make it a good book for all who are interested in sea life and narratives of adventure.

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

IN spite of a reduction in business, due to a disinclination to continue writing hulls at ruinous rates obtaining in the American market under stress of foreign competition, the American Marine Insurance Syndicates and the United States Salvage Association have been able to present an acceptable report on their condition to date. At the annual meeting, held a week ago, there was a full attendance and confidence in the work of these two organizations was expressed freely. Incidentally, for the Syndicates the following were elected to serve three years: Atlantic Mutual, Fireman's Fund, Globe & Rutgers, and the Providence Washington. For the Salvage Association the following gentlemen were elected directors for three years: L. J. Brengle, F. H. Cauty, Edwin M. Jameson, and Walter Wood Parsons.

Chief Underwriter Lawrence J. Brengle prefaced his report on the Syndicates with the following observations:

"The review of the underwriting year of 1924 does not leave us with any feeling of content, nor is it possible to picture a particularly bright future . . . at least until the foreign market awakes to the realization that underwriting on American hulls cannot be conducted at a profit on the terms at which they are now accepting this business. Early in 1924 rates and values seemed to have stabilized, but later on, due largely to competition among foreign underwriters for premium income, there was a further reduction in both rates and values, and today most fleets when offered for renewal ask some concession. We have allowed reductions where we felt that past experience warranted it, and have endeavored to retain an interest in all business on which we could obtain terms that we felt would let us break even. Many fleets, however, have been offered on such low terms that we have declined the business until more favorable



An interesting salvage picture showing 10-inch centrifugal pump working on the wreck of the steamer Tatjana. The Tatjana sunk off Vally Island, Vancouver, was abandoned by the underwriters and afterwards salvaged by the Pacific Salvage Corporation of Victoria. She is now in commission again as good as ever.

conditions prevailed. This has naturally caused a decrease in our premium income. I do, however, feel that with the passing of 1924, and the fact that conditions in this country, as well as in Europe, are undoubtedly better than a year ago, we should sooner or later derive the benefit arising therefrom."

Details of the several Syndicate accounts were presented as follows:

Syndicate "C", 1921 account. There was a further substantial progress during 1924 in this account, and it now stands with a profit of \$2,233,160.67—a gain of \$287,884.26. This has been the result of the writing off of reserves for losses which have not materialized, and the successful conclusion of certain litigation.

Syndicate "C", 1922 account. The substantial loss in this account, noted in last year's annual report, has now turned to a profit, the account standing with a credit balance of \$180,054.61. It is safe to assume that further improvement will be shown.

Syndicate "C", 1923 account. This has been a particularly unfortunate one. There were six total losses, aggregating about \$1,000,000 in addition to the normal run of partial loss claims. It is probable that improvement will be experienced in this account later on.

Syndicate "C", 1924 account. It is too early, as yet, to anticipate how this business will run.

Disbursements business. The Syndicates began, in January, 1924, the

acceptance of risks with respect to disbursement and/or other total loss interests. Since that time they have received lines of this class on all fleets in which they have participated in the hulls. They have also underwritten a considerable volume of premiums of such business where they were not interested in the hulls. The total premiums written on this class of business during the year amounted to \$190,855, against which losses have been sustained of \$116,250.

Statistics. Figures for Syndicates "B" and "C" have been completed from inception (August 10, 1920) to and inclusive of risks that expired prior to December 16, 1923. Similar statements will hereafter be made as of December 16, 1924, and semi-annually thereafter. This important data show the profit and loss on individual fleets, as well as the business as a whole, and also reveal the actual loss cost on a gross ton basis. It shows the cost per gross ton of losses arising from general average, particular average, collision done and sustained, and total loss. All this information has been classified as to the type of vessels and the trade.

Salvage Association. The growth of this fine service was normal during 1924, without any particular outstanding features. A number of changes were effected which have tended to reduce costs without impairing the efficiency of the organization or lessening its value to underwriters. The support of underwriters has been extensively secured with respect to all matters affecting their hull business. The Association's personnel remains the same as it was a year ago. At the close of 1924 there were forty-six persons in its employ, including thirteen surveyors at New York and other ports.

Damage survey work. This work for the United States Shipping Board shows a falling off of about 25 per cent (from 2110 in 1923 to 1569 in 1924). This has resulted from an improved personnel and condition of upkeep prevailing in these vessels. The same conditions as before have worked to minimize damages in 1924. As compared with 1923, there were fewer vessels in commission this year. The volume of private work

has held its own, with 1367 surveys as compared with 1362 the previous year.

Condition survey work. In this, also, there has been a tendency to decrease, from a total of 929 surveys in 1923 to 862 last year. This has resulted from further operating retrenchment on the part of the Board. On February 1, 1925, there were 308 Shipping Board vessels (omitting tankers) in operation, as against 374 on the same date of last year. The condition survey work of the Association is of great importance, and is so regarded by all concerned.

Representatives. One hundred representatives of the Association are stationed at strategic points in all parts of the world; practically every important sea port is covered by this service. Last year these agents made a total of 108 surveys, of which 64 were for the account of the Shipping Board, and 44 were on privately insured vessels. As respects the number of cases handled, the ports had the following order: Manila, 21; Tampico, 14; Yokohama, 10; Havana, 8; Hamburg, 7; London, 7; Kobe, 7; Shanghai, 5; and Santos, 5.)

The Association's handling of cases involving salvage during 1924 continued to increase. A majority of them were handled by the new York salvage officer, although a number were successfully directed by the organization's local men in the various outlying offices.

Special work. The examination of general average adjustments by the Association progressed very satisfactorily last year. This department is conducted by D. C. Anderson, O. J. DuFour and E. N. White. In all, 178 cases were received and 165 of them were reported on. They involved general and/or particular average and/or special charges totaling over \$10,000,000, of which the share due from hull and/or cargo approximates \$6,225,000.

In his report on this work Mr. Anderson stated:

"Two points have been dealt with more prominently than others, in connection with adjustments: one of foreign exchange and the proper

		STEAMERS		SAILING VESSELS		POWER SCHOONERS		TOTALS	
Date	No.	Net Tonnage	No.	Net Tonnage	No.	Net Tonnage	No.	Net Tonnage	
1910	8	4,217	9	2,828	3	135	20	7,180	
1911	7	3,326	5	3,350	1	2,458	13	9,134	
1912	5	2,297	11	2,942	5	393	21	5,632	
1913	14	7,742	12	6,593	4	111	30	14,446	
1914	11	9,163	7	3,088	4	597	22	12,848	
1915	9	10,494	6	5,195	5	556	20	16,245	
1916	9	7,574	2	2,398	3	405	14	10,377	
1917	10	6,551	12	8,520	3	844	25	15,915	
1918	23	31,374	16	14,400	1	94	40	45,868	
1919	12	12,493	7	4,311	1	15	20	16,819	
1920	9	9,640	7	4,691	1	88	17	14,419	
1921	10	13,443	5	3,598	2	17	17	17,058	
1922	13	15,782	8	8,235	2	57	23	24,074	
1923	25	40,025	7	3,460	2	20	34	43,505	
1924	16	5,886.42	3	3,445	2	92	21	9,423.42	

TOTAL

15 Yrs.	181	180,007.42	117	77,054	39	5,882	337	262,943.42
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List showing, by types, the number of total wrecks on the Pacific Coast for years 1910 to 1924, inclusive, prepared by the Marine Department of the San Francisco Chamber of Commerce to show the necessity for increase in Coast Guard equipment.

method of its conversion when foreign shipowners or foreign disbursements have been under discussion; this is still before a special committee of the Board dealing with the subject. The other question is whether general average should be credited with the prepaid freight for new cargo loaded into the space made vacant by the cargo sacrificed and not carried forward. This is before counsel, and their opinion is that such freight should be credited. . . . Record is being made of principles and practices, so as to be available for ready reference as bearing on future cases, and thereby valuable information is being gathered."

Government service. The working agreement entered into in 1922 between Syndicate "A" subscribers and

the United States Shipping Board and the United States Shipping Board Emergency Fleet Corporation functioned unchanged last year to the satisfaction of both parties. The Association's income from work done for private accounts was slightly more than 50 per cent of the total cost of the organization. Monthly accounts to the Shipping Board were rendered and settled with due promptness. The Board has passed the final Syndicate "A" accounting for the period up to January 1, 1923, and there is now nothing outstanding in this direction excepting the current accounts which are approved and settled from month to month.

Location of representatives. It will be of interest to know that representatives of the Salvage Association are maintained at the following ports

North British and Mercantile Insurance Company, Ltd. The Commonwealth Insurance Company, of New York

PARROTT & CO., Pacific Coast Marine Agents

320 California Street

E. L. BARRY, Manager

SAN FRANCISCO

FIREMAN'S FUND

Insures Hulls, Cargoes,

HEAD OFFICE: CALIFORNIA AND SANSOME

JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON

E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

in the United States outside of New York City: Boston, Baltimore, Norfolk, Savannah, New Orleans, Galveston, San Francisco and Seattle.

Magnet Cranes Tabooed

In a number of countries experiments have been made in the use of electro-magnetic cranes for the loading and unloading of cargo, and in the majority of cases the practice has been abandoned because of the effect upon the compasses of the vessels. Even the removal of the compass ashore during the handling of the cargo failed to do away with the influence of the magnetize portions of the ship. The trouble arises from the metal portion of the hull becoming magnetized if, by any chance, the face of the magnet crane comes into contact with it during the time the current is on. In some instances the compasses have continued to indicate north even when the vessel was sailing due south.

An Italian hull underwriter was recently confronted with a considerable loss occasioned by the failure of the compass to work properly after an electro-magnetic crane had been used in discharging a part of the cargo. The magnet had touched the ship and all of its iron work had become magnetized. American underwriters are wondering what an American court would have to say to a claim arising from such a source.

York-Antwerp Rules

Apparently the York-Antwerp Rules, 1924, are not going to pass muster in the United States. The American Institute of Marine Underwriters, a few weeks ago, gave them a half-hearted acceptance, the members being of opinion that while the rules were not what was precisely desired in this country it was better, in the interest of international harmony, to take the half-loaf rather than hold out for the whole. But a more considerable interest than the Marine Institute has set its

face against them. On March 16 a meeting was held at Washington, under the auspices of the Chamber of Commerce of the United States of America, at which more than thirty representatives of insurance, shipping and industrial interests were present for a thorough discussion and resultant action on the work of the 1924 conference of the International Law Association at Stockholm. The underwriters' delegates voted for the revised rules, but the overwhelming judgment of the meeting was that another meeting of the International Law Association be called for further consideration of the proposed rules, as, in the form submitted, they "are not acceptable to the commercial and shipping interests of the United States."

In order that the precise attitude of this country might be determined for submission at such a meeting, if it is called, a special committee of seven was appointed "for the purpose of receiving, hearing, considering, and reporting to this conference upon concrete suggestions for changes in said proposed rules." The committee is composed of the following: Judge Harrington Putnam, a New York admiralty lawyer; Ira A. Campbell, a New York admiralty lawyer; D. Roger Englar, of the New York admiralty law firm of Bigham, Englar & Jones; Ernest W. Congdon, of Johnson & Higgins; William H. LaBoyteaux, president of Johnson & Higgins; Arthur M. Boal, assistant admiralty counsel of the United States Shipping Board; and P. M. Ripley, of the American Sugar Refining Company, who represented the National Traffic League at the Washington conference.

On April 23, this committee met and held a public hearing in the assembly room of the Merchants' Association, New York City. It is expected that it will be in position to report back to the Washington conference by May 30.

Loss of Weight

Marine underwriters have long been fighting to exclude from their coverage the numerous risks which are not properly of the perils of the sea but which have been forced upon them through competition and the necessities of the late world war. Among such risks are theft, pilferage, leakage, sling and hook damage, loss of weight, etc., etc. The last named hazard has at last been definitely challenged by British underwriters, who claim that many elements conspire to effect the diminishing of weight, few of which have anything to do with sea perils. An agreement has been framed by London and Liverpool underwriters, for application to business written in the United Kingdom. This agreement is now effective. It reads as follows:

"We hereby agree that as and from a date to be arranged we will not specially insure the risk of losses arising from loss in weight and/or shortage in policies issued in the United Kingdom on shipments of produce, such as the commodities mentioned below and the like:

"Cereals, cocoa, coffee, copra, gum, pepper, rice, sago, seeds, spices, sugar, tapioca, tobacco, vegetables."

New Law Broadens Cover

Governor Smith of New York has affixed his signature to a new bill, which becomes immediately effective, which amends the insurance law in relation to the transaction of marine insurance and will permit insurers to underwrite loss or damage to jewels and valuable metals. The broadened cover includes "precious stones, jewels, jewelry, gold, silver and other valuable metals, whether used in business or trade or otherwise and whether the same be in course of transportation or otherwise."

Ice Patrol Begins

Both the Tampa and the Modoc, Coast Guard vessels, have been sent

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Freights and Disbursements

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CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

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out from Boston inaugurating the international service of ice observation, ice patrol and ocean derelict destruction for the 1925 season. Alternating, they are to establish patrol of the ice area in the North Atlantic under the provisions of the international convention for the safety of life at sea as signed at London on January 20, 1914. The radio call letters NIDK have been assigned to the patrol. The purpose of this service is to locate icebergs and field ice nearest to the North Atlantic lane routes, and also to make a comprehensive study of water temperature for scientific use.

News in Eastern Offices

Johnson & Higgins-Willcox, Peck & Hughes, Inc., after having been located in the Atlantic Mutual building, at Wall and William streets, for twenty-three years, have moved into larger quarters in the Munson building, 67 Wall street, where they will occupy nearly five floors.

Forrest E. Single, of the admiralty law firm of Bigham, Englar & Jones, who distinguished himself by his invaluable work as a representative of the marine insurance companies of this country during the critical days at Tokyo following the earthquake of September 1, 1923, has formed a law partnership with Theodore L. Bailey of New York, a well known insurance attorney. The firm is known as Bailey & Single and has offices at 15 William street, New York City. Mr. Single is a "native son" of California and a graduate of Stanford University.

Trezevant & Cochran, of Dallas, Texas, have sold their marine department and marine general agency contracts to Frank Rimmer, who for some time has been in charge of that branch of their business. Mr. Rimmer has his headquarters in the Kirby building, Dallas, representing the United States Merchants & Shippers, Royal Exchange, Fire Association, and Indemnity Marine as marine

general agent for Texas, Arkansas, and Oklahoma. He will report through Appleton & Cox, Inc., marine managers for the United States.

William C. Brewer, one of the oldest and best known marine underwriters of Boston, died of heart disease during the closing days of March. He had been associated with his cousin, Frank Gair Macomber, for more than forty years. He was sixty-five years of age.

Samuel Bird, president of Talbot, Bird & Company, has gone to Europe

for a couple of months on business.

J. F. Purcell, of Platt, Fuller & Company, is visiting South America in the interests of his firm. He expects to be gone three or four months.

The Syndicates have decided not to engage in Lake hull underwriting for the present. They have never been in this line, but had it under consideration.

Bowden, Gazzam & Arnold, of Seattle, have been appointed Washington state marine general agents of the Universal of Newark.

Freights and Charters

April 17, 1925.

SINCE OUR last report the grain market has moved downward and the liners are trying to fill parcel space for May as low as 25/-. There are some fixtures to report but they are old and do not represent the market.

For new crop barley the liners are holding for 35/-, but the selling and booking has stopped presently and it is difficult to foresee the resumption of booking.

The lumber market in Japan is very weak and we understand baby squares have been booked at \$6 and that charterers and liners are having great difficulty filling their tonnage.

The Australian market for May has been strong and June/ July/ August should command from \$14 to \$15, providing the other world markets do not weaken to such a degree that tonnage will turn to the Pacific for business.

The following fixtures have been reported for grain to the United Kingdom/Continent: Japanese stmr. Borbeaux Maru, grain, 38/9, terms private, Mar.-Apr. loading; British stmr. Benvrackie, barley, 36/6, Aug.-Sept., Strauss & Co.; Japanese m. s. Florida Maru, wheat, April loading, rate and charterers not mentioned.

For lumber to Australia the following steamers have been reported fixed: Danish stmr. Parana, three trips, \$15, June loading, J. J. Moore & Co., Inc.; Danish stmr. Bolivia, three trips, \$15, July, J. J. Moore & Co., Inc.; American schr. W. K. Hall, \$14, Canadian Trading Co.; Japanese stmr. Montreal Maru, \$15.50, May loading, J. J. Moore & Co.

The following steamers have been reported fixed with lumber of the Orient, April loading, rates not mentioned: Japanese stmr. Choyo Maru, Suzuki & Co.; Japanese stmr. Clyde Maru, Yakagawa Co.; Japanese stmr. Koshun Maru, same charterers; Japanese stmr. Shinkai Maru, Douglas Fir Exploitation and Export Co.

American stmr. Viking has been taken for lumber from Puget Sound to Yavaros, Mexico, terms private, by American Trading Co.

The following steamers have been reported fixed with lumber to Africa: British stmr. Newton Ash, June loading, terms private, J. J. Moore & Co., Inc.; British stmr. Benclench, Apr.-May loading, same charterers; Japanese stmr. Taiyu Maru, \$17, May-June loading, H. R. MacMillan Export Co.

British stmr. Atlantic City has been reported fixed with lumber

from Columbia River and British Columbia to United Kingdom, April loading, £17,000, Hind, Rolph & Co.

The following steamers have been reported fixed with lumber to the Atlantic Seaboard: American stmr.

Commercial Spirit, Mar. loading, terms private, Slade Lumber Co.; American stmr. West Katan, May loading, rate and charters not mentioned; Swedish stmr. Sagoland, \$14.50, Apr. loading, charterers not

mentioned; Swedish stmr. Australic, \$14.50, April loading, South Alberta Lumber Co.; Norwegian stmr. Luise Nielsen, \$13.50, May loading, same charterers.

Japanese stmr. Hakutatsu Maru,

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San Francisco

is reported fixed from San Francisco to Yokohama, Kobe and Osaka, with general cargo, May loading, John C. Ogden Co.; Japanese stmr. Ibukisan Maru, North Pacific to the United Kingdom, sleepers, 60/-, Apr.-May loading, Balfour, Guthrie & Co.

The following steamers are reported as taken on time charter: Norwegian m. s. Epoca, delivery Panama Canal, 6 months, option 12 months, terms private, late March loading, Pacific Mail Steamship Co.; Norwegian m. s. Nordbo, delivery San Francisco, redelivery Australia, 7 to 9 months, \$1.40, May/June loading, American Trading Co.; British stmr. Tatjana, delivery British Columbia, redelivery North of Hatteras, round voyage, lumber, \$1.05, Apr./May loading, H. R. MacMillan Export Co.; American m. s. La Merced, 6 months, bare boat, Alaskan trade, terms private, Alaska Consolidated Fisheries; British stmr. Hambleton Range, North Pacific to Australia, lumber and merchandise, 6/-, J. J. Moore & Co.; American stmr. M. J. Scanlon, delivery Pacific Coast, redelivery U. S. Atlantic Coast, May loading, terms private, General Steamship Corp.

British stmr. Newton Ash is reported fixed from the United Kingdom to the North Pacific at 20/-, prompt loading, Meyer, Wilson & Co.

The following sales have been reported: American tanker Talsagas, U. S. Shipping Board to Associated Oil Co.; American schr. Ecola, \$6500, Balfour, Guthrie & Co. to Capt. R. Peterson; American stmr. President Pierce, President Taft, President Wilson, President Lincoln and President Cleveland, \$5,625,000, U. S. Shipping Board to Dollar Steamship Line (now in litigation District Columbia); American stmr. Lake Faulk, \$50,000, U. S. Shipping Board to Filipinos Lumber Co., Manila; American stmr. Lackawanna, \$10,000, U. S. Marshal, Tacoma, to Albina Engine Works, Portland; U. S. stmr. Comfort, \$151,000 (high bid), U. S. Navy Department to General Metal & Supply Company; U. S. N. tanker Newport News, \$27,500 (high bid), U. S. Navy Department to J. F. Blain; American schr. Rosamond, W. L. Comyn & Co. to North Ameri-

can Fisheries Co.; American stmr. Mount Carroll and Mount Clinton (subject to survey), Shawmut S. S. Co. to Matson Navigation Co.; British stmr. Nile (to be scrapped), Bernardini & Clinker to General Metal Supply Co.

PAGE BROTHERS,
Brokers.

(Continued from page 221)

the ship will pass at 3 x 2 or 6 miles from the light.

Again note the time, E, when the bearing is 63 degrees from the bow. If the difference in time between D and E is 7½ minutes, the ship will have made 2.8 miles during that interval and will pass at 2.8 x 2 or 5.6 miles from the light.

This can be checked again by noting the time of the cross bearing. This method is much more complicated to explain than to put in operation and any officer can master it in a few minutes. Another advantage of this method, which was originated by a French Line captain about twenty-five years ago, is that if the intervals between the bearings 27°-34°-45°-63° decrease, you will know that the current is taking the ship towards the shore, and if the intervals increase the current is taking the ship offshore.

Diesel and Oil Engineering Handbook, by Julius Rossbloom. 800 pages, profusely illustrated, published by The Technical Publishing Company, Los Angeles. Price \$5 postpaid.

This is a third edition of a very practical compilation in convenient form of general engineering data concerning the world's most prominent types of diesel and other oil engines. This edition has been enlarged, corrected, and revised to bring the edition of 1923 abreast of the times in an industry which is growing at a faster rate than almost any other in the world.

In addition to the handling of oil engines, the book carries a section on oil field engineering. It will be found very convenient and very useful as a reference book for general design and details of various makes and types of oil engines.

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AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

CONTRACTS FOR AUXILIARY DIESEL ENGINES

The United States Shipping Board has awarded contracts for 32 diesel engines of approximately 150 horsepower each, to be used as auxiliary power on the twelve Shipping Board steamers to be converted to motorships. Contracts were awarded as follows:

Pacific Diesel Engine Company, Oakland, California, 22 engines to cost \$257,125; 8 sets of American Bureau of Shipping and additional spares and tools, \$20,200.

McIntosh & Seymour Corporation, Auburn, New York, 9 engines, \$133,742; 4 sets of American Bureau of Shipping and additional spares and tools, \$10,412.

Worthington Pump & Machinery Corporation, 4 engines, \$48,813.33; 2 engines and compressors, \$35,566.67; 2 sets American Bureau of Shipping and additional spares and tools, \$4450.

This makes a total cost for thirty-seven engines to equip fourteen ships of \$510,309.

SELECT THIRTEEN VESSELS TO BE CONVERTED

Thirteen vessels ranging from 8600 to 9500 tons deadweight have been selected by the Shipping Board from its laid-up fleet for conversion from steam to diesel propulsion in the first step of its \$25,000,000 conversion program. Five others remain to be selected, contracts having been placed with engine builders for power units and auxiliaries for eighteen vessels.

The vessels selected were built by five different yards. They are:

West Harts and West Hartland, 8600 tons deadweight, built by the Columbia River Shipping Company. Now tied up at San Francisco and Seattle, respectively.

Crown City, West Honaker, and West Cusseta, 8300 tons deadweight, built by the Los Angeles Shipbuilding Corporation. The first is tied up at New York and the others in the James River.

Wilcox, laid up at Mobile; Seminole, at New York; and Yamachichi, Tampa, Unicoi, Sawokia, City of Bayville, and City of Dalhart in James River, each of 9500 tons deadweight and all built by the Oscar Daniels Yard.

The vessels chosen will be reconditioned in time for the installation.

KEY SYSTEM FERRYBOATS

In the April issue we carried a notice in this section of plans under preparation by Hibbs, McCauley & Smith, naval architects of San Francisco, for two new ferryboats of the San Francisco-Oakland service of the Key System Ferry Company. We inadvertently said that the vessels, according to tentative plans, would be similar to the "diesel-electric ferries Hayward and San Leandro built for this company in 1922-1923." This reference to the Hayward and San Leandro is in error, inasmuch as the vessels are of turbo-electric propulsion. Each vessel is equipped with two Babcock & Wilcox water-tube boilers, with a total heating surface of 5000 square feet, built for service pressure of 225 pounds and fitted to deliver steam with 65 degrees Fahrenheit superheat. Electric power is generated by one General Electric turbo-generator of 1000 kilowatt capacity and is applied to the propeller shafts by two General Electric double armature motors of 1200 horsepower each.

Preliminary cleaning, sealing and painting are already under way in those parts of the vessel which will not be disturbed by the removal of the steam equipment and the installation of the diesels and auxiliaries.

Bids on the work of installation are to be asked about July 1 and at intervals thereafter, dependent upon the time of delivery of the motors now under construction.

Work in Prospect

It is reported on good authority that the Eastern Steamship Company will, in all probability, change their plans for passenger vessels for the Boston-Yarmouth run, and will build two combination passenger and freight vessels under American registry. Plans and specifications are in charge of Theodore E. Ferris, naval architect of New York.

The Navy Department reports that bids will be advertised in the early fall for the construction by private American shipyard of the scout cruiser authorized by the Act approved December 18, 1924.

The former hospital ship *Comfort* was sold during April to the General Metal Supply Company, Oakland, for \$151,000, that being the highest bid received by the Navy Department for the ship. It is rumored that the General Metal Supply Company has purchased the ship for some one intending to recondition the *Comfort* for the coastwise service between Seattle, San Francisco, and Los Angeles harbor. The work of reconditioning the *Comfort* for coastwise trade would not cost a great deal, as the steamer is now in fair condition. The vessel is 413 feet between perpendiculars, 50 feet 2 inches breadth and 24 feet mean



Hawaiian Standard, diesel-electric tanker recently completed by the Union Plant of Bethlehem Shipbuilding Corporation for the Standard Oil Company (Calif.) for Hawaiian Island service.

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draft and is capable of making 18 knots.

Captain John F. Blain of San Francisco, former operating manager of the Robert Dollar Company, purchased the former Navy supply ship Newport News for \$27,650, which he will condition for the Pacific coastwise trade.

It is reported that the board of directors of the International Mer-

IN
PACIFIC COAST
SHIPYARDS

SHIP REPAIRING
SHIP BUILDING
RECONDITIONING
ENGINE REPAIRS

cantile Marine Company during their April meeting decided on the construction of three passenger and freight vessels for the intercoastal service of the Panama Pacific Line. While we have not received the particulars as to dimensions, it is understood the three proposed liners will be smaller than the Manchuria or Mongolia, now in the service, and will be built with speed and comfort as the two main essentials.

The Mare Island Navy Yard, Mare Island, California, are now preparing plans for a \$150,000 dredge to pump mud from the yard channel into the back bay.

Recent Contracts

Newport News Shipbuilding & Drydock Company have a contract from the Merchants & Miners Transportation Company, Baltimore, Md., for three combination passenger and freight steamers. The vessels will be 350 feet in length, 36 feet depth, and 52 feet beam, and will be propelled by triple expansion engines developing 2700 horsepower, steam being supplied by four oil-fired Scotch marine boilers. A speed of about 13½ knots will be maintained. The vessels will cost \$1,125,000 each and will be ready for service in July and later of next year.

Los Angeles Shipbuilding & Drydock Corporation on April 10 was awarded contract from the Los Angeles Harbor Commissioners for the construction of a fireboat for that harbor. The bid submitted was \$214,000. The boat will be equipped with seven Winton engines, each

guaranteed to develop 300 horsepower. The only other yard submitting bid was Bethlehem Shipbuilding Corporation, \$231,325.

Spedden Shipbuilding Company, Inc., Baltimore, Md., has an order for a steel hull ferryboat for the Gloucester & Yorktown Ferry Company, Gloucester Point, Va., to be equipped with 260 horsepower Fairbanks-Morse engines.

J. C. Johnson, Port Blakely, Wn., has an order from the Sunny Point Packing Company for a cannery tender, 86 feet long, to be equipped with a 165-horsepower Atlas-Imperial diesel engine.

Robertson's Shipyard, Alameda, has an order from the San Francisco Bridge Company for a towboat 50 feet long to be equipped with a 100-horsepower diesel engine.

Dravo Contracting Company, Pittsburgh, has an order for a diesel-engined towboat for the Stewart Sand Company, Kansas City; also an order for six sand and gravel barges for the Ohio River Sand Company, Louisville. They are building a diesel-engined towboat for stock, which will be similar to the one for the Stewart Sand Company.

Manitowoc Shipbuilding Corporation, Manitowoc, Wis., has an order for a coal and ore freight vessel from the Rockport Steamship Company. The vessel will be 470 feet over all, 60 beam, and 31 depth.

Marietta Manufacturing Company, Point Pleasant, W. Va., has an order for a derrick boat hull from the U. S. Engineers.

Nashville Bridge Company, Nashville, Tenn., has an order for a twin

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

The Pacific Marine Review, published monthly at San Francisco, Calif., for April 1, 1925.
 State of California,

County of San Francisco, California.

Before me, a notary public in and for the State and county aforesaid, personally appeared B. N. De Roehie, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Pacific Marine Review, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, and business manager are:

Publisher, J. S. Hines, 151 Tunnel Road, Berkeley, Calif.

Editor, A. J. Dickie, 1036 Mariposa Avenue, Berkeley, Calif.

Business Manager, B. N. De Roehie, 943 Fresno Avenue, Berkeley, Calif.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

J. S. Hines, 151 Tunnel Road, Berkeley, Calif.
 3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.
 4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder

appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements, embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of bona fide owner, and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only.)

B. N. DE ROEHIE,
 Sworn to and subscribed before me this 25th day of March, 1925. E. M. CLARK.

(My commission expires April 22, 1928.)

IN ATLANTIC COAST SHIPYARDS

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SHIP BUILDING
RECONDITIONING
ENGINE REPAIRS**

screw, tunnel type towboat, 100 feet long, 26 feet beam, and 4 feet draft, to be engined with a 480-horsepower diesel engine.

Keel-layings

Twin screw towboat for Cary Davis Tug & Barge Co., Seattle, by J. C. Johnson's Shipyard, Blakely, Wn., Mar. 16; cannery tender for Sunny Point Packing Co., Apr. 2.

Four steel vessels for U. S. Coast Guard, by Defoe Boat & Motor Wks., Bay City, Mich., Mar. 11, 12, and 21, and Apr. 1.

Lawrence Barrett, steel flush deck barge, Barrett Line, Cincinnati, by Midland Barge Co., Midland, Pa., April 1.

Mohawk, combination steamer, for Clyde Steamship Co., by Newport News Shipbuilding & Drydock Co., April 1.

Ferryboat for City of New York by Staten Island Shipbuilding Co., March 27.

Launchings

Nobska, passenger and freight steamer, for New England Steamship Co., by Bath Iron Works, Ltd., March 24.

William C. Atwater, bulk freighter, for Wilson Transit Co., by Great Lakes Engineering Works, Apr. 4.

John A. Lynch, ferryboat, for City of New York, by Staten Island Shipbuilding Co., Mar. 26.

Deliveries

Joseph H. Frantz, bulk freighter, to Columbia Steamship Co., Cleveland, by Great Lakes Engineering Works, River Rouge, Mich., Mar. 12.

Tugboat to Milwaukee Tugboat Line by Manitowoc Shipbuilding Corp., Apr. 1.

Dolly Barrett, Stella Barrett, Adelaide Barrett, to Barrett Line, Cincinnati, by Midland Barge Co., Mar. 12 and 30.

Shipyard Notes

The Associated Oil tanker Tulsagas, recently purchased from the Shipping Board, arrived at San Francisco the middle of April and went to the yards of Bethlehem Shipbuilding Corporation, where her turbine engines are being removed and

reciprocating engines installed. The reciprocating engines are to be taken out of the concrete freighter Peralta for installation in the Tulsagas.

* * *

During the past month the Second Portland District Corps of Engineers have put into service two new tugs, which were built at Linnton moorings, Portland, Oregon. The tugs are diesel powered and will be used in towing barges on the jetty construction work at Coos Bay. The tugs were named Colonel Charles F. Powell and Morton L. Tower.

* * *

Wilson Brothers Shipbuilding Company, Astoria, Oregon, are building a harbor patrol boat for the Port of Portland, to be equipped with Atlas-Imperial diesel engines. The boat will be ready for operation about June 1. This company on April 10 launched a 40-foot towboat for the Crown Willamette Paper Company equipped with a 50-horsepower Atlas-Imperial diesel engine.

* * *

The giant airplane carrier Saratoga, which is building at the New York Shipbuilding Corporation, Camden, New Jersey, was launched on April 7. A full description of this vessel appears in another section of Pacific Marine Review for this issue.

* * *

J. H. Madden & Company, Sausalito, California, has an order for a 90-foot power cruiser for H. O. Harrison of San Francisco.

* * *

Two large river steamers, the Delta King and Delta Queen, are now nearing completion at Stockton, California, and the Delta King will be launched during May. The vessels are being assembled by the California Navigation Company. They are of steel construction, the plates and beams having been fabricated on the Clyde, Scotland, and shipped to Stockton. The vessels will be of 1700 tons register, 285 feet long, 50 feet beam, and with a loaded draft of 7½ feet. They will represent an investment of \$1,000,000. Passenger accommodations will be provided by 36 connecting rooms with baths and 60 single rooms with twin beds. Space for 40 automobiles will be provided in addition to cargo space.

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*Surveyors to
Bureau Veritas
Int. Register*

THOMAS G. BAIRD

16 CALIFORNIA STREET
SAN FRANCISCO

Douglas 2198

GENERATORS

BOILERS

PUMPS

LIDGERWOOD WINCHES



Holly. 2156

**GAS ENGINES—30 to 120 H. P.
REFRIGERATING UNITS
1-2-4 Ton**

ALSO

**JURICK REFRIGERATION
COMPRESSORS**

Factory Branch

Climax Engineering Company
1001 North Orange Drive,
HOLLYWOOD, CALIFORNIA

These vessels will be put in service on the Sacramento River between Sacramento and San Francisco. The growth of river traffic on this route is increasing at such a rate that the two new vessels will be needed to supplement the service performed by the Capital City and Fort Sutter, now in operation.

(Continued on page 249)

Progress of Construction

Pacific Coast

A. W. de YOUNG BOAT & SHIP-BUILDING CO., INC. Alameda, Calif.

Purchasing Agent, Warren A. Casey.
No. 260, hull No. 3, cabin cruiser, Coast Guard; 200 HP; Sterling high speed engs; launched Feb 28/25; delivered Apr 25.
No. 261, hull No. 9, sister to above; launched Feb 28/25; delivered Apr 21.
No. 262, hull No. 10, sister to above; launched Mar 7/25; delivered Apr 25.
Yuba, snag boat, U. S. Engineers; 166 length; 37-8 beam; 5 depth; stern wheel, oil burning; accommodations for 40 crew; keel Nov 19/24; launched Feb 7/25; deliver Mar 1/25, est.
South Shore II, twin-screw bay freighter, South Shore Port Co., S. F.; 105 long; 32 ft 8 in beam; 7 ft 8 in depth; 2 90 HP Atlas Imperial diesel engs; launched Mar 30/25.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

John H., cannery tender, Libby, McNeill & Libby; 65x17x7; keel Feb 15/25; launch Apr 18/25, est; deliver Apr 22/25, est.
Selma S., cannery tender, sister to above; launch Apr 18/25, est; delivery Apr 22/25, est.
Twelve gill net sailboats, Libby, McNeill & Libby; 28x8x3.
No name, twin screw tugboat, Cary Davis Tug & Barge Co., Seattle; 65x18x5 ft; 85 HP Enterprise diesel eng; keel Mar 16/25; launch Apr 22/25, est; deliver May 1/25, est.
No name, cannery tender, Sunny Point Packing Co., Seattle; 86 length by 19 beam; 165 HP Atlas Imperial diesel eng; keel Apr 2/25; launch May 25/25, est; deliver June 10/25, est.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 HP; two WT express type boilers; 10,000 tons disp; keel Apr 11/25; launch July 1/25, est; deliver Jan 1/26, est.

ROBERTSON'S SHIPYARD Alameda, Calif.

Two barges for Missouri Valley Bridge & Iron Co.; 72x28x5 ft.; delivered Apr 1/25.
Seven barges for Missouri Valley Bridge & Iron Co.; 64x26x5 ft.; delivered Apr 25.
Two barges for Missouri Valley Bridge & Iron Co.; 48x16x5 ft.; delivered Apr 25.
No name, towboat, San Francisco Bridge Co.; 50 LBP; 15 beam; 5 draft; 100 HP diesel eng; deliver July 1/25, est.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
Two dump scows, U. S. Engineers, Pittsburgh; 100x26x5-10; deliver Aug 27/25, est.
One towboat, Carnegie Steel Co.; 170x39x6 ft.; deliver July 25, est.
Six sand barges, J. K. Davison & Bro.; 135 x26x10; deliver June 25.
One acid tank barge, Carnegie Steel Co.; 175 ft by 26 ft by 11 ft; deliver summer 1925.
One cement barge, Kosmos Portland Cement Co.; 175x32x8.
Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.
Four barges, U. S. Engineers; 80x26x5.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.
No name, hull 790, self unloading stone carrier, Bradley Transportation Co.; 166 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors, Foster boilers.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Burke.
Nobaka, hull 98, passenger and freight steamer, New England Steamship Co.; 202 LBP; 36 beam; 10 loaded draft; 15 knots loaded speed; capacity 2000 passengers, 100 tons freight; one 4 cycle, TE eng, 1200 HP; 2 B&W boilers, 4450 square feet HS; keel Nov 1/24; launched Mar 24/25.
Le Sen, hull 99, schooner yacht, Irving C. x; 58 L.O.A.; 12 beam; 7 ft 6 in draft; Kermath engs; keel Jan 20/25; launch May 25, est; deliver June 25, est.
Sakhaya, hull 100, schooner yacht, same as above, for Howard C. Smith; keel Jan 20/25; launch May 25, est; deliver June 25, est.
Thyng, hull 101, schooner yacht, same as

above, for W. F. Carey; keel Jan 23/25; launch May 25, est; deliver June 25, est.

Margaret Mary, hull 102, schooner yacht, for John Blossert; 58 L.O.A.; 12 beam; 7-6 draft; Red Wing eng; keel Feb 3/25; launch May 25, est; deliver June 25, est.

Cygnat, hull 103, schooner yacht, for Paul Hammond; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Feb 6/25; launch May 25, est; deliver June 25, est.

Seven Seas, hull 104, schooner yacht, for Van S. Merle-Smith, same as above; keel Feb 23/25; launch May 25, est; deliver June 25, est.

Mystic, hull 105, schooner yacht, for Irving Eldredge, same as above; keel Apr 15/25, est.

Diamond W., hull 106, schooner yacht, for Thas. E. F. McCann, same as above; keel Mar 14/25, est.

Nokomis, hull 107, schooner yacht, for Wm. A. W. Stewart; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Mar 16/25, est.

Venturer, hull 108, schooner yacht, for Harold Wesson, same as above; keel Mar 18/25, est.

Ahyee, hull 109, schooner yacht, for Dave H. Morris, same as above; keel Mar 20/25, est.

No name, hull 110, schooner yacht, for G. M. Heckscher; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr 8/25, est.

Seafarer, hull 111, schooner yacht, for Parker Corning; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Apr 10/25, est.

Charmian, hull 112, schooner yacht, for Newcomb Carlton; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr 13/25, est.

Shrwater, hull 112, schooner yacht, for F. L. Crocker; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Apr 15/25, est.

No name, hull 114, schooner yacht, for Julius Fleishman, same as above; keel Apr 17/25, est.

No name, hull 115, express cruiser, Clifford Brokaw, 50 ft over-all; 10 ft beam; 3 ft draft; keel Jan 20/25; launch and deliver May 25, est.

No name, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 HP each; keel Jan 20/25; launch and deliver May 25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N. Massachusetts, hull 1400, battleship U.S.N.; to be scrapped.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmingon, Del.

Hull 3496, tug, I. W. Sullivan Co., hull only; 93 ft 6 in LBP; 25 ft beam; 9 loaded draft.
Hull 3497, same as above.
Hull 3498, carfloat, D. L. & W. R. R.; 326 LBP; 40 beam; 5 loaded draft.
Hull 3499, sister to above.

BETHLEHEM SHIPBUILDING CORPORATION, SPARROWS POINT PLANT Sparrows Point, Md.

Hull 4234, dredge hull, Ellicott Mach. Corp.; keel Jan 14/25; delivered Mar 12/25.

CHARLESTON DRY DOCK & MACHINERY COMPANY Charleston, S. C.

Purchasing Agent: Charles R. Valk.
Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 LBP; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 HS; keel Nov 24; launched Feb 24/25; deliver Oct 25, est.
Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 LBP; 33 beam; 2 ft 11 in loaded draft; 1 Scotch boiler, 11 ft 6 in by 12 ft 3 in; keel Feb 25/25; launch May 25, est; deliver Dec 25, est.

CLINTON SHIPBUILDING & REPAIR COMPANY Philadelphia, Pa.

No name, hull 45, oil barge, City of Phila.; 88 LBP; 30 beam; 8 loaded draft; keel June 24, est; launch July 24, est; deliver Aug 24, est.

COLLINGWOOD SHIPBUILDING CO. Collingwood, Ontario

Purchasing Agent: E. Podmore.
No name, hull No. 74, bulk freighter, Geo. Hall Coal & Shipping Corp., Montreal; 252 LBP; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface condensing; 700 HP; 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Jan 31/25; launch May 9/25, est.
No name, hull No. 75, bulk freighter, sister to above; keel Feb 2/25; launch June 2/25, est.
No name, hull No. 76, bulk freighter, sister

to above; keel May 2/25, est; launch June 27/25, est.

CONSOLIDATED SHIPBUILDING CORPORATION Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 180-HP Winton diesel engs.
Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.
Hull 2797, cruiser for R. F. Hoyt, 81 ft long; 2 Wright & Typhoe engs, 500 HP each.
Hull 2798, cruiser for H. C. Stutz, 65 ft long; 2 180-HP Speedways.
Hull 2799, cruiser for Elliott & Co., 44 ft long; 180-HP Speedway.
Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150-HP Speedways.
Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300-HP Speedways.
Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300-HP Speedways.
Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO. Philadelphia, Pa.

Purchasing Agent: Ed. C. Geehr.
Malolo, express passenger and freight liner, Matson Navigation Co.; 582 L.O.A.; 577 length at water line; 83 ft beam; depth molded to C deck 54 ft; displacement 22,050 tons; 8250 DWT; speed 22 knots regular, 23 tons maximum; 25,000 shaft horsepower; Cramp-Parsons turbines; oil burning B&W water-tube boilers; keel June 25, est.
Hulls 510-17, 8 steel screws, City of Philadelphia; 500 cu yds capacity; deliver Oct 25, est.

DEFOE BOAT & MOTOR WORKS Bay City, Mich.

Purchasing Agent: G. O. Williams.
C. G. 115-129, inc; 15 patrol boats for U. S. Coast Guard; 75 long; 13-6 beam; 5 delivered.
Hull No. 79, wooden cruiser, E. F. Cooley-Lansing; 42 ft 10 in long; 10 ft beam; 3 ft draft; 12 mi speed; Scripps E-6 gas engs; keel Feb 1/25; launch May 10/25, est; deliver June 25, est.

Hull No. 80, steel vessel, U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 210 DWT; 300 HP; diesel engs; keel Feb 28/25; launch Apr 30/25, est.

Hull No. 81, sister to above; keel Feb 28/25; launch Apr 30/25, est.

Hull No. 82, sister to above; keel Mar 11/25.

Hull No. 83, sister to above; keel Mar 12/25.

Hull No. 84, sister to above; keel Mar 21/25.

Hull No. 85, sister to above; keel Apr 1/25.

Hull No. 86, sister to above.

Hull No. 87, sister to above.

Hull No. 88, sister to above.

Hull No. 89, sister to above.

DRAVO CONTRACTING COMPANY Pittsburgh, Pa.

Hulls 341-4, 4 sand and gravel barges, builder's account; 135x27x8; 320 gross tons ca.
Hulls 367-375, inc., 9 steel barges for Mississippi River Commission, Memphis; 120 ft by 30 ft by 7 ft 6 in; 430 gross tons each.

Hulls 395-404, inc., 10 steel barges, for stock, 100x26x6-6; 135 gross tons ca.

Hull 405, diesel engine towboat, Stewart Sand Co., Kansas City; 120 HP; 25 tons.

Hull 406, diesel engine towboat, for stock; same as above.

Hulls 407-412, inc., 6 sand and gravel barges for Ohio River Sand Co., Louisville; 130x30x7-6; 830 gross tons ca.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY Kearny, N. J.

Purchasing Agent: R. S. Page.
El Oceano, hull 81, freight strmr. Southern Pacific Co.; 433 LBP; 56 beam; 26 loaded draft; 14 1/2 loaded speed; 7950 DWT; turbine tngs, 6000 HP; 4 B&W boilers; keel Sept 22/24; launched Feb 14/25; deliver Apr 25, est.

No name, hull 82, barge, Pan American Petroleum Co.; 150 LBP; 30 beam; 10 loaded draft; 540 DWT; keel Feb 19/25.

GREAT LAKES ENGINEERING WORKS River Rouge, Mich.

Purchasing Agent: Chas. Short.
Joseph H. Frantz, hull 248, bulk freighter, Columbia S. S. Co., Cleveland; 618 L.O.A.; 592 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12 1/2 mi speed; keel June 1/24; launched Oct 18/24; delivered Mar 12/25.

William C. Atwater, hull 249, bulk freighter, Wilson Transit Co.; 580 LBP; 60 beam; 20 loaded draft; 12 mi speed; 12,000 DWT; TE 2000 HP engs; 3 Scotch boilers, 13 ft 6 in by 11 ft; keel Dec 23/24; launched Apr 4/25; deliver June 25, est.

No name, hull 250, bulk freighter, Cleveland Cliffs S. S. Co., Cleveland; 618 L.O.A.; 592 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12 1/2 mi speed; keel Feb 10/25; launch June 1/25, est; deliver July 25/25, est.

No name, hull 251, bulk freighter, Columbia



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**THE STEAMSHIP MAUI, FLAGSHIP OF THE MATSON FLEET EQUIPPED WITH
BABCOCK & WILCOX MARINE WATER TUBE BOILERS
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CHAS. C. MOORE
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SAN FRANCISCO, CAL.

S. S. Co., Cleveland; 618 L.O.A.; 492 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel April 25, est. launch Aug 25, est. deliver Oct 25, est.

MANITOWOC SHIPBUILDING CORPORATION

Manitowoc, Wis.

Purchasing Agent: H. Meyer.
No name, tug, Milwaukee Tugboat Line; 75 LBP; 21 beam; 10 loaded draft; 12 mi speed; 8000 gross tons; 500 HP engs; launched Jan 31/25; delivered April 25.
No name, hull 216, freighter, Rockport Steamship Co.; 470 L.O.A.; 6 beam; 31 depth.
Hulls 217-19, dump scows, Great Lakes Dredge & Dock Co.; 1100 cu yds capacity.

MARIETTA MANUFACTURING CO.

Point Pleasant, W. Va.

Purchasing Agent: S. C. Wilhelm.
No name, hull 138, sternwheel towboat; 125x30x5 2; tandem comp engs; Western rivers return tubular boilers; keel May 1/24; launched Oct 24.
No name, hull 139, ferryboat; 141 ft long; 30 ft beam; 5 ft 2 in draft; tandem comp engs; Western rivers return tubular boilers; keel May 11/24; launched Feb 15/25; deliver April 25, est.

Hull 141, wreck boat hull, U. S. government; 71 ft long; 24 beam; 4.9 draft; keel Mar 25.

MIDLAND BARGE COMPANY

Midland, Pa.

Purchasing Agent: H. S. Neal.
Dolls Barrett, steel flush deck barge, Barrett Line, Cincinnati; 225 ft long; 36 ft beam; 8 ft depth; 1000 DWT; keel Dec 29/24; launched Feb 7/25; delivered Mar 12/25.
Steel Barrett sister to above, launched and delivered Mar 12/25.

Agnes Barrett sister to above, launched and delivered Mar 30/25.
Eric Barrett, sister to above; launch April 25, est.
Lawrence Barrett, sister to above; keel Apr 1/25.
Cora Barrett, sister to above; keel Apr 15/25, est.

No name, steel wharfloat, Coney Island, Inc., Cincinnati, O.; 225 ft long; 45 ft beam; 6 ft depth; steel superstructure and roof; deliver May 1/25, est.

MIDLAND SHIPBUILDING COMPANY, LTD.

Midland, Ontario

Purchasing Agent: R. S. McLaughlin.
Glennier, hull 12, bulk freighter, Great Lakes Transp. Co.; 560 L.O.A.; 60 beam; 20.6 draft; 3 Scotch boilers; keel May 8/24; launched Nov 18/24; deliver May 25, est.

No name, hull 14, single deck freighter, Great Lakes Transp. Co., Ltd., Midland, Ontario; 582 LBP; 60 beam; 20 loaded draft; 11 knots speed; 12,000 DWT; TE engs, 2800 HP; 3 Scotch boilers, 15 ft 3 in x 11 ft 6 in; keel Mar 16/25, est; launch Oct 25, est; deliver Nov 25, est.

NASHVILLE BRIDGE COMPANY

Nashville, Tenn.

Purchasing Agent: Leo E. Wege.
Colvert, hull 83, steamboat, U. S. Govt.; 128 LBP; 26 beam; deck ash 2 arha, river work; keel launched and delivered Mar 30/25.
Hull 84, barge; 120 LBP; 30 beam; 7 loaded draft; keel Feb 25/25; launched and delivered Mar 23/25.

Chamberlin, hull 91, steamboat hull, principals not named; 140 LBP; 31 beam; 5 loaded draft; keel May 1/25, est; launch and deliver June 15/25, est.

Nashville B., hull 92, diesel towboat, builders' account; 116 LBP; 28 beam; 5 loaded draft; 400 HP; diesel engs; keel Apr 20/25, est; launch May 15/25, est.

No name, hull 93, barge, for builder's account; 120 LBP; 30 beam; 7 loaded draft.

No name, hull 94, diesel electric towboat; P. S. Engineers; 70 LBP; 17 beam; 4 draft; 150 HP eng; keel Aug 25, est.

No name, hull 95, same as above; keel Aug 25, est.

No name, hull 96, twin screw, tunnel type towboat; 100 LBP; 26 beam; 4 draft; 480 HP; diesel eng; keel Apr 15/25, est; launch July 1/25, est; deliver Aug 1/25, est.

NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY

Newport News, Va.

Purchasing Agent: Jas. Plummer, 233 Broadway, New York City.
Cherokee, hull 274, combination steamer, Clyde S. S. Co.; 387.6 LBP; 54 beam; 31.6 depth; 14½ loaded speed; 2600 DWT; Newport News Curtis engs; 4200 SHIP; 4 Scotch boilers; keel Aug 24/24; launched Feb 16/25; deliver June 24, est.

Seminole, hull 275, sister to above; keel Sept 2/24; launch Apr 15/25, est.

Camb., hull 280, combination steamer, New York and Porto Rico Steamship Co.; 412 LBP; 59 ft 6 in beam; 35 depth; speed 15½ knots,

Newport News Curtis turbines; 6000 SHIP; Scotch boilers; keel Jan 19/25; launch July 25, est.

Norfolk, hull No. 282, dredge hull, Atlantic Gulf & Pacific Co. of New York; 162 long; 38 beam; 14 depth; keel Nov 19/24; launched Feb. 3/25; deliver Apr 25, est.

Mohawk, hull 287, combination steamer, Clyde S. S. Co.; 387 ft 6 in LBP; 54 ft beam; 31 ft 6 in draft; 14½ loaded speed; 2600 DWT; Newport News Curtis turbines; 4200 SHIP; 4 Scotch boilers; keel Apr 25; deliver Jan 1/26, est.

No name, hull 288, combination passenger and freight steamer, Mercantile & Miners Transportation Co., Baltimore, Md.; 350 length; 52 beam; 36 depth; 13½ mi speed; TE eng; 4 Scotch oil-fired boilers; deliver May 1/26, est.

No name, hull 289, sister to above; deliver July 26, est.

No name, hull 290, sister to above; deliver Nov 1/26, est.

NEW YORK SHIPBUILDING CORP.

Camden, N. J.

Purchasing Agent: L. G. Buckwalter.
Hull 303, barge, International Cement Corp.; 162 ft long; keel Dec 24/24; launched Feb 25/25; delivered Apr 25, est.

No name, hull 304, diesel tanker; 480 ft. long; 9500 gross tons; 13,000 DWT; New York-Works-poor engs; 3200 HP.

Hull 305, dredge hull, United Dredging Co.; 170 ft long; keel Dec 24/24.

Hulls 306-7, earfloats, Reading Company; 250 feet long.

Hulls 308-11, earfloats, Reading Co.; 200 ft long.

THE PUSEY & JONES CO.

Wilmington, Del.

Purchasing Agent: James Bradford.
Hampton Roads, hull 1029, automobile and passenger, twin screw, double deck ferryboat, The Chesapeake Ferry Co., Norfolk Ferry Co., Norfolk, Va.; 197 L.O.A.; 59 ft 8 in beam; 9 ft 3 in loaded draft; 14 mi speed; 2 comp. engs; 2 gunboat boilers; keel Mar 25/25; launch June 15/25, est; deliver July 15/25, est.

SPEDDEN SHIPBUILDING CO., INC.

Baltimore, Md.

Purchasing Agent: Wm. J. Collison.
No name, hull 261, steel hull ferry, Gloucester & Yorktown Ferry Co., Gloucester Point, Va.; 115 LBP; 44 beam; 12 loaded draft; 260 HP C O, Fairbanks-Morse eng; deliver Aug 1/25, est.

STATEN ISLAND SHIPBUILDING COMPANY

Staten Island, N. Y.

Purchasing Agent: R. C. Miller.
John A. Lynch, hull 753, ferryboat, City of New York; 151 ft long; launched Mar 26/25.

Henry Bruckner, hull 754, sister to above; keel Sept 24.

No name, hull 755, sister to above; keel Sept 24.

No name, hull 757, sister to above; keel Feb 18/25.

No name, hull 758, sister to above; keel Mar 27/25.

No name, hull 756, ferryboat, New York Central R. R.; 210 ft long; keel Dec 27/24.

SUN SHIPBUILDING COMPANY

Chester, Penn.

Purchasing Agent: H. W. Scott.
No name, hull No. 83, towboat, International Petroleum Co., Toronto, Canada; 160 LBP; 44 beam; 3 loaded draft; 650 HP; oil burning; keel Feb 15/25; launch Apr 15/25, est.

One derrick barge, for Anderson Machine Corp., Ltd.; 70x30x6-2.

TEBO YACHT BASIN COMPANY,

Brooklyn, N. Y.

Purchasing Agent: R. C. Smith.
Murray Hulbert, hull 32, ferryboat, Dept. of Plant Structure, City of New York; 148 LBP; 53 ft beam over guards, 37 ft 6 in beam molded; 9 ft 9 in loaded draft; 11 knots loaded speed; 588 gross tons; comp engs; 2 B&W boilers, 3182 sq ft heating surface; keel Sept 4/24; launched Dec 27/24; deliver Mar 25, est.

Edward Reigelman, hull 33, ferryboat, City of N. Y., sister to above; keel Sept 4/24; launched Dec 27/24; deliver Mar 15/25, est.

No name, hull No. 34, ferryboat, City of N. Y., sister to above; keel Sept 4/24; deliver Apr 15/25, est.

No name, hull No. 35, ferryboat, City of N. Y., sister to above.

No name, hull No. 36, ferryboat, City of N. Y., sister to above.

THE CHARLES WARD ENGINEERING WORKS

Charleston, W. Va.

Purchasing Agent: E. T. Jones.
Lookout, hull 33, towboat, U.S. Engineers, Nashville, Tenn.; 116 ft long; 29 ft beam; 5.6 depth; 2 surface condensing tandem comp engs, 300 HP; 1 watertube boiler; coal burning; induced draft; keel Apr 17/24.

No name, hull 37, tunnel propeller towboat, Kelly Transportation Co.; 126 LBP; 25 beam; 5 loaded draft; 2 diesel engs; 360 HP each.

Repairs

BETHLEHEM SHIPBUILDING CORP., UNION PLANT

San Francisco

Potrero Works

Drydock, paint, misc.: Argyll, Katherine Donovan, Multnomah, Alaska Standard (also damage repairs), Esther Johnson, W. S. Miller, Kern, Eureka, West Nilus, Maween, H. M. Storey, D. G. Seaford, City of San Francisco, Alvarado, Tacoma, Sea Lion. Drydock, paint, engine, boiler and hull repairs: Dorothy Alexander, Chihuahua, Nayarit, Colima, Rose City, Colombia. Engine, boiler, hull repairs: W. S. Porter (also drydock), Guerrero, Frank G. Drum, Eureka, Hauraki, Kewanee, Arabs, Maunamui (also steward's), Texan. Tailshaft repairs: Annie Johnson, West Islip, Point Lobos, Katherine Donovan, Trimountain (also propeller hub), Alvarado, Lubrica, Annette Rolph. Damage repairs: Atlas. Engine repairs: Crampton Anderson, Liebre, San Pedro, President Madison. Make and install one contrapropeller: Calistoga. Propeller repairs: Carlos, Cascade. Furnish and install one Dake steering engine: Shell Oil Barges 5 and 6. Boiler repairs: Point Loma. Wire brush and paint five furnaces: E. R. Rich. Drydock, misc.: U. S. S. California. Misc. repairs: Ginyo Maru, Virginian, Sugillenco, Lubrico, Iowan, Georgia, Mahukona, Manoa, Mongolia, Finland, Noyo, Minnesota, Lillian Luckenbach, Luckenian, Floridian, Robert Johnstone, Point Arena, Atlantic City, San Pedro, Lena Luckenbach, Col. E. L. Drake, Whitney Olson, E. P. Ripley, Richmond, Ecuador, La Purisima, Providencia, K. R. Kingsbury.

San Pedro Works

Drydock and repairs: Strms, Admiral Dewey, West Chopaka, Oleum; schrs, Phyllis, Trinidad, tugs Sea Fox, Sea Lark, Sea Prince. Misc. repairs: strms, San Lorenzo, Emedio, Tamaha, Crofton Hall, Liebre, Montpelier, Searlaria, Mojave, Diana Dollar, War Nizam, Admiral Peary, Stockton, Chuky, Capsa, Tacoma, Suterico, Tah-elee, Samoa, Santa Maria, Los Mamos, Salvage King; schrs, Point Loma, Catherine Donovan.

MOORE DRY DOCK COMPANY

Oakland, Calif.

Drydock, clean, paint, misc. repairs: U. S. A. T. Grant, Enterprise (also deck and rudder), m.v. Carriso (also engine and shaft repairs), Boren (also shaft repairs), schr, Luise, Star of Scotland, Nanuk (also propeller), Annette Rolph (deck). Drydock and repair hull damage: Washington. Drydock, clean, paint, misc. hull, engine and deck repairs: U. S. cutter Bear, U. S. A. T. Thomas (also boiler), m.s. Doris Crane. Drydock, clean, paint and rudder repairs: ferryboat Edward T. Jeffery. Drydock, clean, paint: schr, La Merced. Misc. engine and boiler repairs: China Arrow. Misc. engine repairs: West Jester, tug Hercules, Dauntless, Eknaren, David C. Meyers. Repairs to deck machinery: Washenaw. Hull damage: Astoria. Shaft repairs: Mount Baker. Furnish and renew tailshaft: Lubrico. Misc. hull, deck, engine, boiler and rudder repairs: cutter Idler. Misc. hull, engine and boiler repairs: Santa Barbara, Wellesley, Anne Hanley. Deck repairs: Gargoyle.

NAVY YARD

Bremerton, Wash.

Misc. repairs and docking: battleships Pennsylvania, New Mexico. Misc. repairs: Thompson, Stoddert, Eagle Nos. 32, 38, 57. Miscellaneous repairs incidental to operation as district craft: Mohopac, Tatnuck, Swallow, Ironquios, Pawtucket, Sotoyomo.

PRINCE ALBERT DRY DOCK & SHIPYARD

Prince Rupert, B. C.

Dock, clean, paint, general overhaul: Canadian Voyageur. Docked, clean, paint, misc. repairs: Newington, snagboat Boholink (hull and equipment repairs), Prince George (tailshafts drawn), strmr, Prince Rupert (4 propeller blades changed), tug Pachena (hull repairs), dredge No. 10 (hull repairs). Hull repairs: tug Provincial. 21 fishing vessels overhauled: two scows docked, cleaned and painted.

VICTORIA MACHINERY DEPOT COMPANY, LTD.

Victoria, B. C.

Purchasing Agent: H. S. Hammell.
Reconditioning vessel: strmr, Famous. Drydock, clean, paint hull plating and bilge keel repairs: strmr, Canadian Inventor. Dock, clean, paint, hull repairs: strmr, Princess Patricia, strmr, Orion (also engine repairs), strmr, St. Lawrence (also engine repairs). Draw tailshaft for inspection and repairs, also hull and engine repairs: Princess Ena.

Shipyard Notes

SHIPBUILDING DECLINE CONTINUES

The present total of orders for new ships throughout the world is almost down to the lowest postwar mark, reached in the third quarter of 1923, according to Lloyd's Returns for the first quarter of 1925. Orders now aggregate only 2,396,000 gross tons compared with 2,470,000 tons at the close of 1924, 2,516,000 tons a year ago, and 2,377,000 tons on September 30, 1923. Motor-ships now constitute 42 per cent of the total ships under construction, compared with 37 per cent at the end of 1924, and 28 per cent a year ago.

The San Francisco Chamber of Commerce, on recommendation of the Maritime and Harbors Committee, will initiate legislation at the next session of Congress for an appropriation for three Coast Guard cruising vessels of the Haida type for use along the Pacific Coast.

While there are at present a number of cutters of a tug type in service on the coast, there are only three cruising cutters and these are in service in Alaska six months of the year.

In order that life and property along this coast may be properly and adequately protected, the Chamber deems it essential that three additional cruising cutters be provided. Statistics compiled by the Foreign Trade Department of the local Chamber show that during the fifteen-year period ending December, 1924, 337 vessels, representing a net tonnage of 363,000 tons, were a total loss. The year 1918 showed the greatest loss, forty vessels being wrecked that year and a total loss.

Congress has appropriated \$900,000 for the construction of a cutter to replace the Bear. The latter, however, does special service in Alaska and consequently has not been considered in connection with the request for the proposed three additional cruising cutters.

Admiral Billard of the United States Coast Guard in his last annual report also made a request for these additional ships.

At the yard of the General Engineering Co., Alameda, the old Key Route ferry steamer Yerba Buena has just been remodeled for the

Golden Gate Ferry Company and re-named the Harry E. Speas. The upper deck of the vessel was raised five feet to give ample head room for trucks and other large motor vehicles. Passenger accommodation is provided on the upper deck. The power plant has been overhauled, and the job is practically new in every way. The Harry E. Speas is now in service on the Golden Gate Ferry route.

The docking slips of the General Engineering Company of Alameda, have been kept very busy this spring and in some cases vessels had to be turned away owing to prior engagements of docks. This shows that there is still considerable business along marine lines in the San Francisco Bay district, and that the General Engineering Company is getting its share.

Robert J. O'Connor, general manager of the A. W. de Young Boat & Shipbuilding Company, announced with the launching of the Bay freighter South Shore II on March 29 that plans are under way for improvement of the facilities of the yard. Improvements will consist of dredging along the waterfront of the yard, construction of several new marine ways, and new joiner shop and new mill and machine shop.

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AND DRY DOCK COMPANY**

SHIPBUILDERS-ENGINEERS-REPAIRERS

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SALES OFFICE 26 BEAVER ST., NEW YORK

(Continued from page 205)

shippers in every trade with tonnage enough of their own to start the tramp on her career, if line rates rise above the levels of reason.

There is still another provision in the Act of 1920—the extension of the coastwise laws to the Philippines—which, if it could be made effective, would be of immediate and immense benefit to American shipping. Unfortunately, our policy toward the Islands is even vaguer than our attitude toward our shipping, and it is difficult to see how this portion of the act can be made effective until the broader question of our future in the Philippines is settled.

The 1920 bill brings down to date our actual accomplishments toward a shipping policy. In 1922 ship subsidy was taken down from the shelf, dusted off and put back on the shelf again. The preceding year freights the world over had fallen to pre-war levels. Shipping had taken the dive on which it has not yet found bottom. Paper profits turned to actual and appalling losses. Over 50 per cent of the government fleet went to the mudflats and stayed there, but the remainder continues to operate, and the taxpayer continues to foot the bills.

In principle, the method of operation remains unchanged. The ships are placed in the hands of operators, who run them on a commission, based on the gross freights. It is a "heads I win, tails you lose" arrangement. The more freight, the bigger commissions to the agent, even if the cargo costs more to carry than it pays. There have been gestures in the direction of out and out government operation, but the actual method has hardly changed since 1920.

Undefinable Formulas

Along with this hybrid method of operation there came into existence certain formulas which, being impossible of definition, are in danger of becoming believed by constant repetition. "New trade routes," "essential services," "a balanced fleet," and "potential purchasers" are necessary adjuncts of any proper dissertation on our shipping problem. They sound well and look well on paper, regardless of the fact that no route is being operated on which ships have not run before; that an essential service, being presumably a necessary service, should therefore be self-sustaining, which none of the government services are; that a balanced fleet presupposes continued government ownership since private fleets specialize and are never "balanced"; and that potential purchasers, if human, will remain potential as long as they can get something for nothing. Other formulas, such as "government competition" and "operating losses", barely get in above a whisper.

Out of the cry for "new trade routes" and "essential services" naturally grew a distribution of government tonnage based on local pride and political considerations, rather than sound economic necessity and shipping practice. Petaluma had a line to the Orient. Alviso must have one, too. Angels Camp had four passenger sailings a month. Could Bodie rest content with three? It made no difference that Petaluma's Oriental tonnage might maintain full ships and minimum losses, while Alviso never filled a ship. Somebody else was paying the bills and there were plenty of ships to go around.

And so it stands today. On the one hand, the preamble of the Merchant Marine Act of 1920. On the other, a political institution originally dedicated to the principle of government ownership, forced now to the choice of continuing that principle or destroying

itself, and backed in its natural desire to live by the equally natural desire of persons and localities to keep on getting something for nothing. If the people of the United States want to permanently establish the principle of government ownership and operation of commercial enterprises, they have their opportunity today. Badly as we may think we want an American merchant marine, the price is a staggering one and worth considering before the final step is taken. If they prefer to take their chances with private American initiative and enterprise, they may have to wait for their merchant marine, but they will get it in the end.

Decision Necessary

It must be the one thing or the other. It cannot be both. There may be controversy without end on the best method of re-establishing private American enterprise on the sea. It is time wasted until this decision is made and put into effect. If private ownership is the choice, the method is simple. Repeal the Acts of 1916 and 1920, liquidate the government fleet for what it will bring, and start with a clean slate and a sound inheritance to work out the problem as we have worked out far more momentous problems in our past.

It is none too soon to tackle this decision. To postpone it will inevitably convert it from a dispassionate judgment to a snap choice, forced by circumstances. The government ships, war built, will be necessarily short lived. As they reach their limits of usefulness there will come a demand for new construction, at government expense, to replace them. The day that Congress votes an appropriation for that purpose spells the doom of a privately owned merchant marine and commits this country once and for all to government ownership and operation of its merchant fleet—as long as it has one.

Private American Ownership

The private American owner is not as yet entirely extinct, though he is fast losing the ability to make himself heard. He lurks in the fastnesses of his last natural stronghold—the protected coastwise trade. The clamor of government operators, government regulators, and a host of leagues of varying sizes and descriptions, all telling him his business and how to run it, drowns his still small voice. All he can do is to keep running two jumps ahead of the marshal—and hope.

As I have said in the beginning, there are certain natural forces at work which promise a real revival of the American merchant marine. Like all natural forces, they are working slowly. The war, and all that followed it, suspended them, but it did not destroy them. Today they are painfully struggling back to where they were ten years ago. A discussion of them would serve no useful purpose here. It is another story. What becomes of them will depend on the decision of the next few years. Under government ownership, they will surely perish. Uninterfered with, there is reason to hope that their gradual growth will continue until our glories of the 'forties and the 'fifties become something more than a splendid tradition.

We can read the sign posts at the crossroads. The end of the middle way is in sight. There is nothing gained by dawdling along and postponing the evil day of decision. Where our ships are concerned, let us be done with the wiggle and wobble. Either definitely

Proceed with government ownership and operation, or Repeal the Acts of 1916 and 1920 and take the government out of the shipping business.

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

COMMERCIAL transits of the Panama Canal during the month of March of this year numbered 398, with tolls totaling \$1,840,130.14. In addition to these movements there were 11 transits of small ocean-going launches measuring under 20 tons, on which tolls amounting to \$44.70 were paid, making the total tolls collection for the month \$1,840,147.84, or a daily average of \$59,359.61. The average amount of tolls paid by each of the commercial vessels during the month was \$4,623.37. Since July, 1924, but one month has passed that the revenue has been as large as the last month. During December, 1924, tolls to the amount of \$1,893,495 were collected from 407 vessels.

FAMOUS DESIGNER INSPECTS PORT

Dr. Ernest Foerster, internationally known engineer and designer of the giant liners Leviathan and Majestic recently arrived in San Francisco on a combined business and pleasure trip. Dr. Foerster is with the German shipbuilding firm of Blohm & Voss at Hamburg. The famous engineer made his headquarters in the offices of Sudden & Christenson, and inspected the port facilities and shipyards in the San Francisco Bay district.

MATSON LINE ADDS TO FLEET

Matson Navigation Company officials on April 21 announced the purchase of the steamer Mount Carroll operated by the United American Lines in the intercoastal trade. The vessel was inspected and found to be in excellent condition. For the present the Mount Carroll will remain in port at San Francisco. The steamer Mount Clinton, now at the East Coast, will also be purchased by the Matson Line, following inspection by representatives of the company at Philadelphia. Both the vessels will enter the San Francisco-Hawaii run.

PANAMA-PACIFIC REDUCED FARES

"Around and Across America" is the slogan adopted by the Panama Pacific Line in announcing reduced excursion fares effective with the sailing of the liner Mongolian for New York on May 9 and the departure of the Manchuria from New York for California on May 21. Leaving San Francisco or Los Angeles by one of the intercoastal liners, the tour comprises a stop at Panama City, a voyage through the Panama Canal during daylight, a visit to Havana, and thence to New York. From New York the passenger has the opportunity of selecting any direct rail route back home with the privilege of making stop-overs at scenic points en route. If desired, the tour may be made in the reverse direction. The company has just issued an attractive folder describing the "Around and Across America" tour.

NEW OFFICE IN CHICAGO

The National Malleable & Steel Castings Company, manufacturers of Naco anchor chain cable, railroad specialties, and automobile castings, main offices at Cleveland, announce a new address for their branch sales office in Chicago. This new location is 501 Railway Exchange.

ADMIRAL LINE

Offices of the Pacific Steamship Company at Seattle are now located in the new Pacific Steamship Terminals building at Railroad avenue and Massachusetts street. The general offices of the Pacific Steamship Company will occupy the second floor of the building, while the Admiral Oriental Line and the Dollar Steamship Company will have quarters on the third floor. The Admiral Line held official opening of the new pier adjoining the offices last month with the first sailing of the season of the liner H. F. Alexander for California ports.

EASTERNEER TAKES PACIFIC POST

J. W. Trefry, for several years assistant freight traffic manager of the United American Lines in New York, has been appointed freight traffic manager for the Los Angeles Steamship Company with headquarters in Los Angeles, according to announcement by R. J. Chandler, vice-president and general manager of the line. This position was left vacant through the death of P. F. Finnegan. Trefry takes over his duties May 1, and will have charge of all freight traffic affairs of the Los Angeles Steamship Company, including their coastwise service between southern California ports and San Francisco and the Hawaiian Island route, operated from Los Angeles direct. Trefry will also handle the intercoastal service of the Kosmos and United American Lines, for which lines the Los Angeles Steamship Company are southern California agents.

SEATTLE FIRM EXPANDS

The Weeks-Howe Company, dealers in general ship chandlery and fishing supplies, San Francisco and Seattle, have leased a store at Pier 1, Seattle, formerly occupied by the Marine Supply Company. This move to large quarters became necessary through the steady growth of the Weeks-Howe Company. This firm started in business at Seattle in 1919.

A. M. A. BANQUET

J. Walter Drake, assistant secretary of commerce, will be the guest of honor and principal speaker at the spring banquet of the American Marine Association to be held May 7 at New York. E. A. Filene of Boston will discuss "New Developments in Overseas Passenger Traffic" and give results of a special investigation he has made into the new types of ships and other changes which will be necessary to overcome the losses in the immigration trade.

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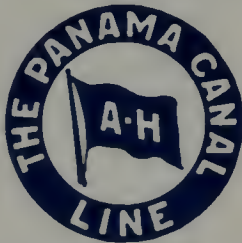
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SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

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Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

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Regular sailings between San Francisco, Seattle, Vancouver, B. C., Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corp., agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.
FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Kearny 5100.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and San Diego, Los Angeles, San Francisco, Oakland,

Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York, Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Passenger Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,

311 California street. Phone Garfield 6760.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.

230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

F. C. Bennett, Pacific Coast manager.

110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.

Mutual Life Bldg. Phone Eliot 8120.

FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

FRENCH LINE COAST SERVICE

THE French Line has chartered two large freighters, the La Marseillaise and Notre Dame de Fourviere, each for a period of ten years, and will add them to its fleet now operating between Pacific Coast ports and Europe. The new schedule calls for two sailings each month in both directions, according to the announcement by Erik Krag, manager of the European services of the General Steamship Corporation, which firm is general agent on the Pacific Coast for the freight services of the French Line. The chartered vessels were built in France in 1921; they have a deadweight capacity of 10,400 tons, and are fitted to burn either oil or coal. The addition of further tonnage by the French Line is in keeping with the policy to employ fast and modern carriers in order to care for the increasing demand in Europe for Pacific Coast products, such as grain, lumber, canned goods and dried fruit. Eleven vessels are now in the French Line's Pacific Coast-European service.

CHANGE OFFICES

From H. E. Burnett, traffic agent of the Oceanic Steamship Company (Sydney Short Line) at New York, is received word that the offices on April 15 were removed to 50 East Forty-second street.

LUCKENBACH LINE

Effective April 19 the Luckenbach Steamship Company began doing its own stevedoring at San Francisco. On the same date the company established a car service department to handle the loading and unloading of cars where inland or switch movement is involved to or from the Luckenbach piers. The entire operation on Piers 29 and 31 being under one control should result in a measure of dispatch heretofore not obtainable, according to the firm's announcement.



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DOLLAR STEAMSHIP LINE

Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.
SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.
Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.

FREIGHT ONLY.
SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4 Central. Phone Elliott 6383.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger Office, 619 Second avenue.
Pacific Steamship Company, agents.
L. C. Smith Building. Phone Elliott 2068.

SAILINGS—Intercoastal.
Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

M. O. Beggs, Agent.
1421 White Building. Phone Elliott 6127.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.
Arctic Club Building.

FREIGHT ONLY.
SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane street terminal. Phone Elliott 6657.

FREIGHT ONLY.
SAILINGS—Intercoastal.
Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.
SAILINGS—Intercoastal.
Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.
Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.
SAILINGS—Intercoastal Service.
Sailings between Los Angeles, San Francisco, Seattle, Vancouver, B. C., New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
541 South Spring street.

FREIGHT ONLY.
SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.
SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.
208 West Eighth street. Phone Main 808.

FREIGHT ONLY.
SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.
Every 19 days from Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
Lane Mortgage Bldg. Phone Metropolitan 6140.

FREIGHT ONLY.
SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.
Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.
Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.
Every 14 days. Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
703 Transportation Bldg. Phone Vandyke 4659.

FREIGHT ONLY.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company,

ENCINAL TERMINALS INCREASE STAFF

Cal M. Covell, president and general manager of the Encinal Terminals at Alameda, California, announces the appointment of C. O. Burgin to the position of traffic manager. Mr. Burgin was previously general freight agent of the Pacific Mail Steamship Company in charge of intercoastal traffic. He is widely known in every department of Pacific shipping and is an authority on rate and tariff matters. He joined the Pacific Mail staff in San Francisco a year ago, succeeding H. E. Stocker, now resident agent of the McCormick Line at New York.

RIVER LINE EXTENDS SERVICE

The Sacramento Navigation Company, operating steamers between San Francisco and Sacramento, has been authorized to extend its service to points on the western waterfront, the Oakland estuary, and the Encinal Terminal, Alameda. The authorization was issued by the State Railroad Commission.

NEW FERRY FOR PUGET SOUND

Commercial organizations of Seattle, Vashon Island, and Kitsap county recently celebrated the inauguration of a new short ferry route across Puget Sound from Fauntleroy to Vashon Island and Harper. E. H. Miller, president of the Vashon Island Commercial Club, was in charge of the maiden trip program.

MORRIS BOEGER INSPECTS PACIFIC

Morris Boeger, leader of German merchant marine affairs, and director-general of the Hamburg-American Lines, the Kosmos Line, Australia Line, and allied services in world trade, recently visited San Francisco and Los Angeles as part of a globe-circling shipping survey. He came to California from Cristobal, and traveled overland to New York, whence he will sail for Europe.

NORTON, LILLY CANAL ZONE OFFICES

Norton, Lilly & Company announce the opening of offices at the Panama Canal in the Masonic Temple building at Cristobal, and the Pacific Terminal building at Balboa. Norton, Lilly & Company now have fourteen branch offices in the United States. The main office is at 26 Beaver street, New York.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.
Transportation Bldg. Phone 821-336.
FREIGHT ONLY.

THE NEW WAY EAST



Fast Service to New York via Panama Canal and Havana

Regular Dependable Coast to Coast Passenger and Freight Service
New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, Tacoma

WESTBOUND

From New York, Pier 61, N. River

MANCHURIA	May 21
MONGOLIA	June 11
FINLAND	June 25
MANCHURIA	July 16

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.

MONGOLIA	May 9	May 11
FINLAND	May 23	May 25
MANCHURIA	June 13	June 15
MONGOLIA	July 4	July 6

Direct connections at New York and thru Bills of lading issued via: American Line to HAMBURG. Red Star Line to ANTWERP.
Atlantic Transport Line to LONDON. White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

PANAMA PACIFIC LINE

INTERNATIONAL MERCANTILE MARINE COMPANY

Passenger Offices:

L. E. ARCHER—Pacific Coast Manager

SAN FRANCISCO
460 Market St.

SEATTLE
619 Second Ave.

LOS ANGELES
510 South Spring St.

PACIFIC STEAMSHIP CO. (The Admiral Line),
SAN FRANCISCO
60 California St.

LOS ANGELES
322 Citizens National Bank

SEATTLE
L. C. Smith Bldg.

Pacific Coast
PORTLAND
Admiral Line Terminal

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INTERCOASTAL

322 Citizens National Bank.
Passenger Offices: 510 So. Spring st. Phone TR 6408.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
A. G. Bartlett Bldg. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
Railway Exchange Bldg. Phone Broadway 2744.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.
Yeon Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland, and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

1008 Spalding Building.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.
Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Montreal. Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.

402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.

Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Galveston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

Kingsley Navigation Company, Ltd.

602 Pacific Building. Phone Seymour 9506.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and San Diego, Los Angeles, San Francisco and North Pacific Coast ports.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports. San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports.

H. S. SCOTT

BACK AGAIN

H. S. Scott, president of the General Steamship Corporation, returned to the head office at San Francisco recently after several weeks of travel throughout eastern and gulf ports studying general business conditions.

KIDDE ENGINEER

EQUIPS YACHT

C. L. Griffin, engineer of Walter Kidde & Company, Inc., New York, recently installed the Lux fire extinguishing system on Keith Spalding's yacht Goodwill at San Pedro, and is visiting San Francisco before returning to the head office.

PORTLAND FIRM

Organization of the firm of McBride & Piper, Inc., general agents and freight forwarders, is announced in a message from Portland, Oregon. Robert McBride and Edgar E. Piper, directors of the new business, are well known in Northwestern shipping, having served with a number of companies.

OREGON STATE

COMMISSIONERS

Captain William C. McNaught and E. G. Heinrici of Portland, and G. S. Gunderson of Astoria, have been renamed as the Oregon state board of pilot commissioners.

LARGER SPACE

FOR CUNARD LINE

The Seattle branch of the Cunard Line, the Anchor Line and the Anchor Donaldson Line has been moved to a spacious suite at 407 Union street in the White building. The change to more convenient quarters is announced by E. E. Ullberg, northwest manager. P. W. Whatmough, general passenger manager of the trans-Atlantic group at New York, is visiting Seattle.

JOINS McCORMICK

HEAD OFFICE STAFF

Joseph Tunny, formerly terminal agent at Wilmington for the McCormick Steamship Company, is now in San Francisco as assistant operating manager for the line. Tunny is assistant to John Hencken, operating manager.

E. H. SCOTT

DIES IN SOUTH

E. H. Scott, traveling freight agent for the Williams Steamship Company, suffered a fatal heart attack in Los Angeles last month. Scott was 50 years old. He is mourned by scores of friends in traffic circles.

NORTON, LILLY & COMPANY

GENERAL AGENTS, PACIFIC COAST

ISTHMIAN STEAMSHIP LINES (Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transhipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR

(Pacific-Mediterranean Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

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ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels.)
112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CALIFORNIA ORIENT LINE

Pacific Mail Steamship Co., managing operators.

508 California street. Phone Sutter 3800.

(Operating U. S. S. B. vessels.)

PASSENGERS AND FREIGHT.

SAILINGS—Trans-Pacific Service.

Every 14 days from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—Hongkong-India (Freight Only.)
Connection at Hongkong every 2 weeks for India ports.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.

Robert Dollar Building, 311 California street.

Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Fortnightly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.

(Operating U. S. S. B. vessels.)

Sudden & Christenson, agents.

230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning via San Francisco.

OSAKA SHOSEN KAISHA

Williams, Dimond & Co., Agents.

310 Sansome St. Phone Sutter 7400.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

549-51 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

222 Robert Dollar Bldg. Phone Garfield 3899.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.

City ticket office: 1300 Fourth Ave.

General offices: 1519 R. K. Ave. So.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.

Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

American Bank Building. Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

Pier 6.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los An-

HOLLAND-AMERICA LINE MOVING

San Francisco offices of the Holland-America Line (Netherlands-American Steam Navigation Company) are being moved on May 1 to spacious new quarters at 120 Market street, ground floor of the Santa Marina building, corner of Market, California and Drumm streets.

LLOYD'S NEW HOME

A London dispatch carries the interesting news that Lloyd's, the famous English underwriting organization, has begun the building of its new home on Leadenhall street. The excavations are already under way, and it is expected that King George will lay the cornerstone late in May. The structure is to be one of the most imposing in London and will cost \$6,000,000. There will be nine stories above ground and two basement floors. The underwriters' room or hall is to be 160 feet square and one of the upper floors will be devoted to the famous captains' room, with a smoking lounge and special dining quarters.

SEATTLE FROM MOJI

K. Hotta, who has been manager of the Moji branch of the Nippon Yusen Kaisha, has been transferred to Seattle as manager for the line at that port. He succeeds S. Sakamoto, who has been transferred to the New York office as manager.

REDWOOD CITY OPENS TERMINAL

Redwood City, California, is now on the shipping map. Six hundred tons of cement were recently loaded on the steamer Silverado, bound for Portland. This was the first shipment over the new terminal.

MATSON OFFICIALS

Captain Charles W. Saunders, operating manager of the Matson Navigation Company, and Millard R. Hickman, superintending engineer, returned to the head offices at San Francisco on April 21, following a trip to the Hawaiian Islands for conferences on service affairs.

FURNESS LINE ADDING TONNAGE

The Furness Line has announced the addition of two vessels for the dried fruit movement from the Pacific Coast to European ports during August and September. The vessels are the Valemore and the Rexmore, 10,000-ton carriers and 12.5 knot speed.

United States Government Combination Freight and Passenger Services From Pacific Ports

American Oriental Mail Line

Trans Pacific Service from Seattle to
Yokohama, Kobe, Shanghai, Hong Kong, Manila.

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Trans Pacific Service from San Francisco to
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PRESIDENT LINCOLN

PRESIDENT CLEVELAND

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212 Mortgage Guarantee Bldg. Phone 874-891.
PASSENGERS AND FREIGHT

SAILINGS—Fortnightly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick & McPherson, Agents.
Transportation Bldg. Phone Vandike 6171.
PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—At frequent intervals from Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone Trinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

PORTLAND

AMERICAN ORIENTAL SERVICE

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Board of Trade Bldg. Phone Broadway 4348.

SAILINGS—Monthly to ports of Japan and China as inducements offer.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

702 Wilcox Building. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)

Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.
Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning via San Francisco.

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Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

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Wallem & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

203-4 Wilcox Building. Phone Bdwy. 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

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Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

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Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

PASSENGERS FOR GUAM SERVICE

The steamer Stuart Dollar early in April completed her first round voyage in the new service to Guam, and before starting on her second voyage will have thirty passenger accommodations installed. The demand for passenger service to Guam has prompted the company to make this move. It is expected that another vessel will be put in service soon.

FIRM ENTERS SHIPPING FIELD

Walter Scammell and Captain C. Wilvers have opened offices in the Fife Building, 1 Drumm street, San Francisco, where they will conduct a general shipping and lumber business.

NOTED ENGINEER VISITS COAST PORTS

Sir Alfred F. Yarrow of London, designer of the Yarrow boiler and widely known in marine circles, reached California recently from New York via Havana on the Panama Pacific liner Manchuria. He is bound for Victoria, where his son, Norman Yarrow, is director of Yarrows, Ltd. This was Sir Alfred's first visit to San Francisco. He was surprised with the development era and prosperity of San Francisco and Los Angeles.

PORTLAND-SALEM

Future operation of the steamer Northwestern between Portland and Salem will be under the name of the Salem Navigation Company, which has been incorporated to maintain the service. The vessel sails three times weekly from Portland for the upper Willamette River district.

N. Y. K. MOTORSHIPS

The Asuka Maru and Atago Maru, two new motorships of 11,000 tons deadweight capacity, built for Nippon Yusen Kaisha by Lithgows, Ltd., of Port Glasgow and Harland & Wolf, Glasgow, have been placed in the N. Y. K. service between Seattle and Japan. The Asuka Maru will make its initial trip from Seattle May 25 and the Atago Maru July 5. The principal dimensions of each vessel are: over-all, 440 feet; breadth 57 feet, and depth 38½ feet. Each vessel is equipped with two sets of diesel engines developing 4000 horsepower and producing a speed of 12½ knots; also three large auxiliary engines to supply electric power to all the auxiliary and deck machinery, including the steering gear.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

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2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp, Rotterdam.

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The East Asiatic Company, Inc., agents.

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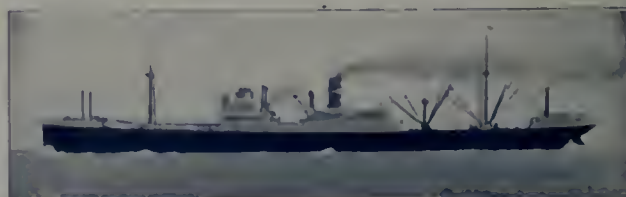
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Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Service between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, sub-agents.
240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

Furness, Withy & Company, Ltd.
Furness (Pacific), Ltd.
710 Balfour Building. Phone Sutter 6478-6479.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
351 California street. Phone Sutter 6427.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, general agents.
200 California street. Phone Douglas 8040-1-2.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Co., general agents.
332 Pine street. Phone Sutter 3700.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenburg, Malmo, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)
401 Market street. Phone Douglas 7510.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.

FREIGHT ONLY.

SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.

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Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

PASSENGERS AND FREIGHT.

SAILINGS—North Pacific-European Service. Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

SEATTLE

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.
Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.
823 Alaska Building. Phone Elliott 9104.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Service between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, agents.

Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)
Furness (Pacific), Ltd.

Burchard & Fiske, Inc., agents.
705 Arctic Building.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports as inducements offer.

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.

SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
Stuart Building. Phone Elliott 1464.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Company.
Hoge Building. Phone Elliott 5412.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenburg, Malmo, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)
204-206 Rainier Building. Phone Elliott 4944.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

LUCKENBACH MAKES LUMBER RECORD

Shipping records were broken recently at Seattle when the freighter Lewis Luckenbach of the Luckenbach Steamship Company steamed from the East Waterway Dock, bound for New York and Boston with 8,012,000 feet of lumber, the largest consignment ever carried from a Pacific Coast port. A party of Northwestern shipping executives were on hand to see the remarkable departure. M. J. Wright, district manager of the Luckenbach Line at Seattle, directed the loading. The Lewis Luckenbach and a sistership, the Andrea F. Luckenbach, are the largest freighters under the American flag. They are of 14,350 deadweight tons and 10,663 gross tons register.

JOHN CUSHING TALKS AT NEW YORK

John E. Cushing, traffic manager of the American-Hawaiian Steamship Company, recently addressed the United States Intercoastal Conference, convening at New York. His subject covered the views of Pacific Coast steamship officials as well as consignees of intercoastal cargo at Pacific Coast ports.

RADIO SERVICE

W. F. McAuliffe, marine superintendent of the Radio Corporation of America, San Francisco, announces the signing of a service contract for the maintenance of wireless apparatus on the steamers of the Luckenbach Line.

AGENCY FOR MILTON W. BROWNE

James J. Rudden, widely known marine surveyor, with headquarters at 24 California street, San Francisco, has been appointed Pacific Coast agent for the forced air circulation and humidity control system of Milton W. Browne, Kansas City, Missouri.

CAPTAIN HOWELL TAKES ALGONQUIN

Captain C. F. Howell, for four years commander of the Coast Guard cutter Shawnee, has been transferred to Puget Sound, where he will be master of the cutter Algonquin. Lieutenant-Commander H. E. Ridebout of the U. S. S. Commanche, now at Galveston, succeeds Captain Howell. The Algonquin joins the Bering Sea fleet this summer, leaving Seattle in June.



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The National Magazine of Shipping

JUNE, 1925



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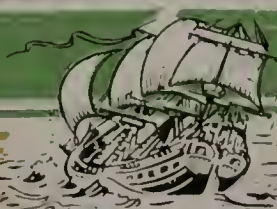
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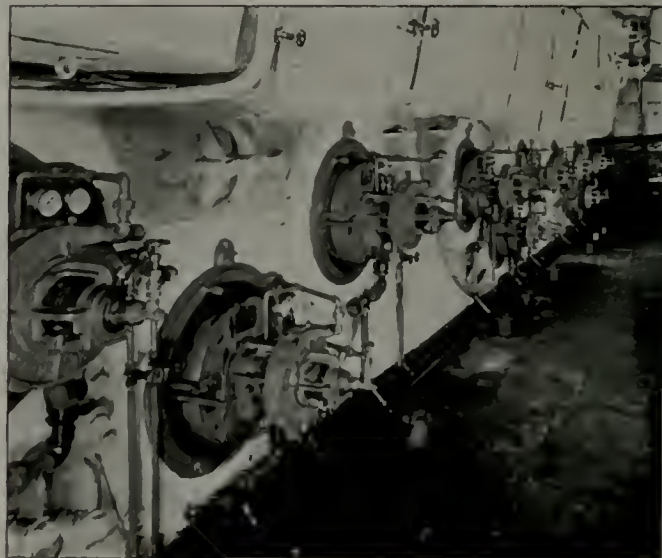
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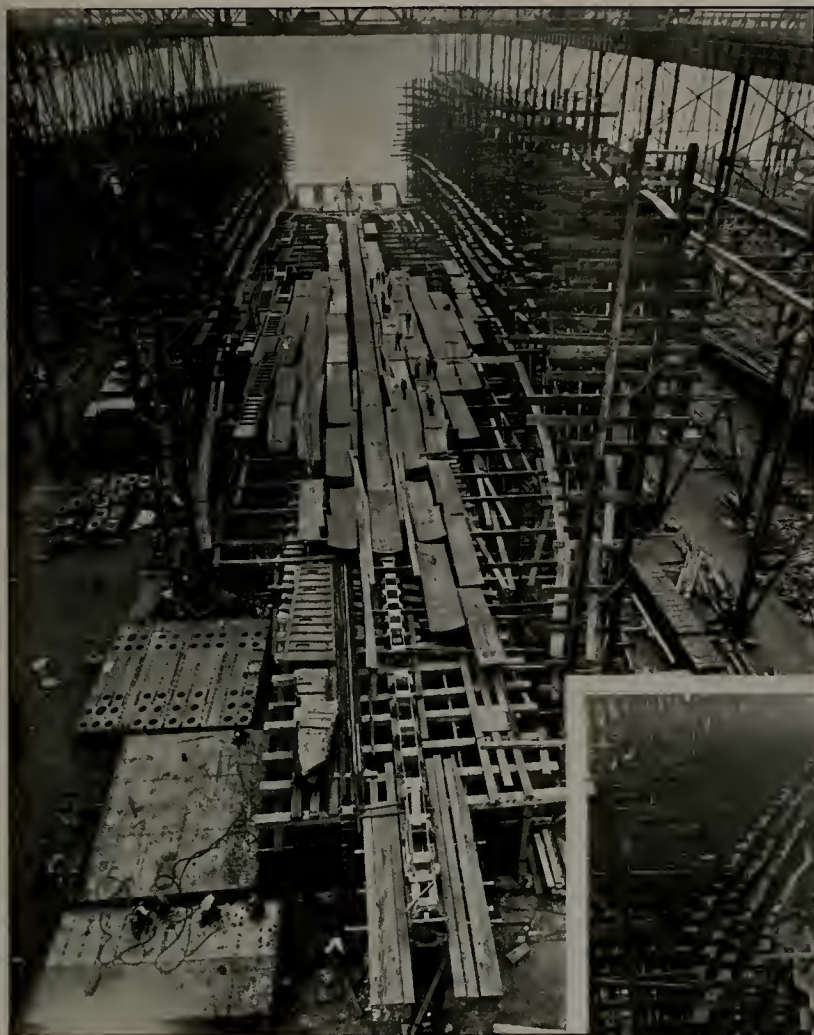
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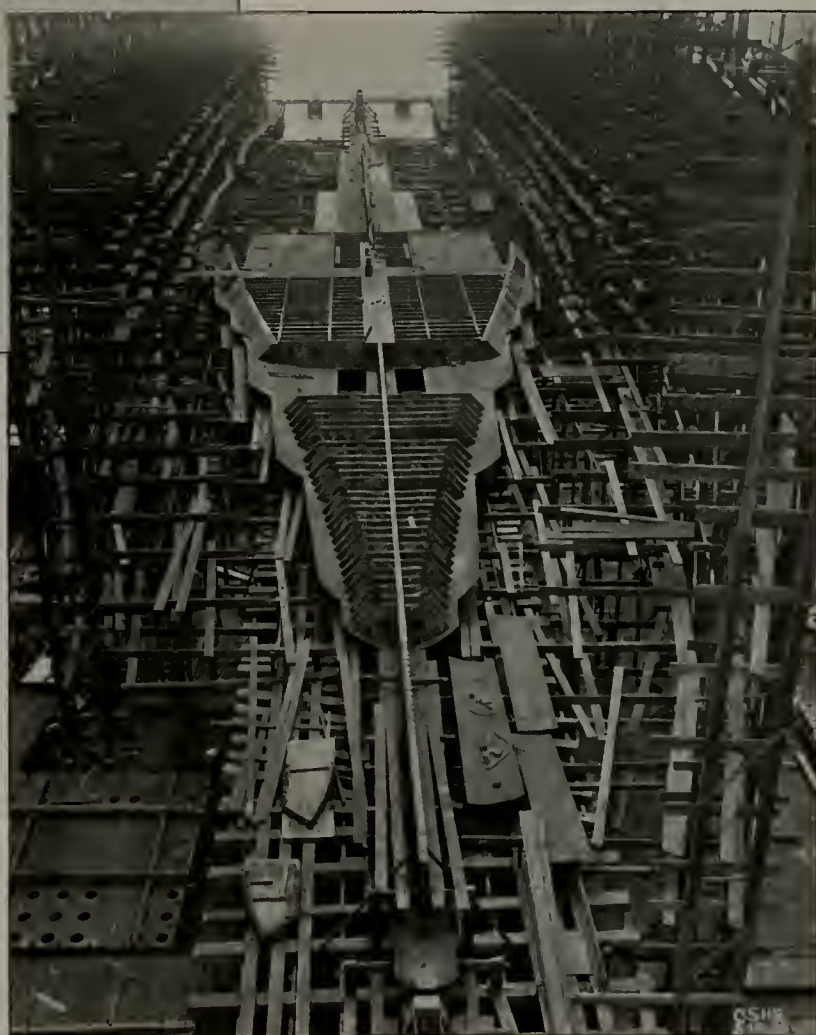
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FOR 1925



Twin Screw Express Liner Malolo to be Used in the Fast Service Between San Francisco and Hawaii that the Matson Navigation Company Will Inaugurate in the Spring of 1927



The upper picture was taken May 4, just after the ceremony of keel laying at the Philadelphia yard of the Wm. Cramp and Sons Ship and Engine Building Company. The lower picture shows progress made twelve days later. Many of the finest American passenger liners of the past were built at this yard.

The Malolo was designed by and is being built under the supervision of Gibbs Brothers, Inc., naval architects of New York.

PLIBRICO

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FURNACE LINING

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the TRANSPACIFIC and ROUND-THE-WORLD FLEETS of the
Dollar Steamship Line

— TESTIMONY —

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President Wilson
President Pierce
President Lincoln
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Hollywood	Glacier
West Jappa	Eldorado
West Nivaria	Dakotan
West Prospect	Venezuela
West Cajoot	Ecuador
West Notus	Colombia
West Cactus	Yale
Asbury Park	Harvard
David C. Meyer	Cambrai
Point Judith	Admiral Fiske
West Ivan	Manukai

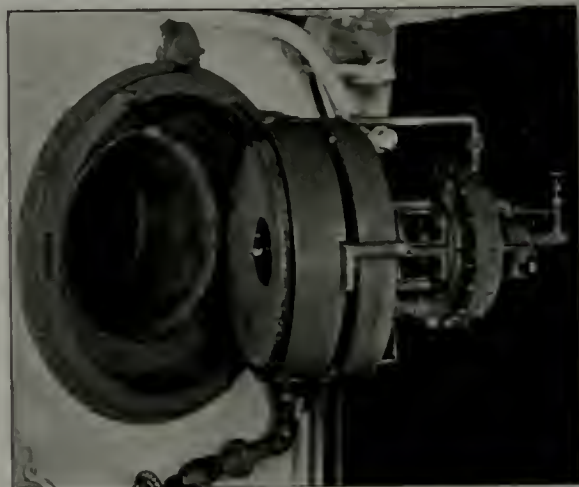
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Above — Plibrico sidewall, "President Pierce," Yarrow-type boiler, after five round voyages to the Orient.

Center — S. S. Glacier has 19 tile doors lined with Plibrico; also 19 Plibrico combustion rings.

Below — Plibrico front wall, S. S. "President Cleveland," after 3 round trips between San Francisco and the Orient.



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The National Magazine of Shipping

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Official Organ
Shipowners' Association
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R. STANLEY DOLLAR NOW AN INTERNATIONAL SHIPPING POWER

Establishment of Round-the-World Service and the Purchase of "535s" Brings Dollar Steamship Lines to the Front in World's Shipping Corporations

WITH the recent sale by the United States Shipping Board of five of its large trans-Pacific liners to R. Stanley Dollar and his associates of San Francisco, public interest has again been stimulated regarding the activities of the American merchant marine.

When the war-time shipbuilding program was in progress, everyone had the most sanguine outlook regarding the future of the hundreds of vessels which were being built by the government. Later developments relating to government ownership and operation somewhat clouded the optimistic viewpoint which was generally held for the American merchant service, and by degrees the man in the street and his mate began to become disinterested in the future of our merchant fleets.

However, in shipping circles many plans were being instituted which later proved successful in establishing the merchant service on the firm and reasonable basis of private ownership and operation. The government realized that it was neither fair nor profitable for it to engage in the ownership and operation of vessels when private American companies were risking their capital in building up various trade routes. The Shipping Board, acting under instructions from Congress, began advertising at stated periods for bids for the various fleets of vessels it wished to dispose of. In this manner many vessels have been sold and are now sailing the seas under private ownership in the interest of American commerce.

The majority of these sales have excited considerable comment, and the purchase of the five trans-Pacific liners by Stanley Dollar has occasioned even greater interest than was manifested in 1923, when he acquired seven vessels of a similar type from the Shipping Board which he placed in the round-the-world service. No doubt this is due to the fact that the importance of the Pacific Ocean as related to American foreign trade is of paramount concern to the mercantile interests of the nation. The trend of world affairs shows that the volume of trade between the

United States and the Far East is steadily increasing; consequently an American fleet operating in this service becomes one of the vital factors in the fostering of greater commercial intercourse between the East and West.

When the government contemplated the sale of these liners, it took all this into consideration and acted accordingly, feeling confident that the Dollar Steamship Line would be able, by reason of its past achievements, to promote added foreign trade.

Coincident with this transaction, Stanley Dollar has been prominently launched in the public eye as a figure of national and international importance. In shipping circles he has long been regarded as a man of exceptional foresight and executive ability, but due to the fact that he has avoided publicity whenever possible, it was not until his most recent purchase of additional tonnage that the general public became acquainted with his varied activities.

How he came to attain his present position as one of the leaders, if not the leader, of American shipping is a typical instance of American family life and business management. The story, as given to Pacific Marine Review by the home office of the Dollar Steamship Lines, San Francisco, is substantially as follows:

Stanley Dollar is the son of Captain Robert Dollar, pioneer lumberman and steamship operator in the China trade. Captain Dollar, known the world over for his picturesque and successful career, is now 81 and still the active head of the company which he founded in San Francisco two score years ago. To further prove that his vitality is undiminished he recently boarded the President Lincoln, first of the five trans-Pacific liners to sail out of San Francisco with his house flag flying from the mast, and is now touring the world in behalf of his interests. He expects to be gone at least six months and will probably call on well over a thousand persons during his visits in various cities throughout the world.

With such a father it is no wonder that Stanley Dollar was inspired to enter the steamship business

at the conclusion of his schooling and gain a knowledge of the industry which has enabled him to forge ahead to the place where he stands today. From boyhood he has been trained by his father in order that the vast lumber holdings of the Dollar company, both on the Pacific Coast and in the Far East, together with the even greater holdings of the Dollar Steamship Line, might continue to be operated by the Dollar family. Captain Dollar founded his enterprises during the late eighties, when he opened a small office in the commercial section of San Francisco and began to engage in the lumber trade with China. As his business expanded he became a ship owner, beginning with the operation of a 350-ton coastal steam schooner named the Newsboy. There are now close to thirty passenger and freight vessels sailing under the Dollar house flag.

How Stanley Dollar came to assume active control of a large portion of the Dollar holdings is but another instance of his unremitting labor directed toward the advancement of American shipping. The first time he individually engaged in a shipping deal outside the jurisdiction of the Dollar company was in 1920, when he went to Seattle and became a member of the board of directors of the Pacific Steamship Company, assisting in the reorganization of that concern. This company has been in existence for many years and provides the Pacific Coast with fast passenger and freight service between Seattle, San Francisco, Los Angeles, and San Diego, as well as southeastern and southwestern Alaska. Immense expansion had taken place in Pacific coastwise traffic at the time Stanley Dollar became affiliated with the organization, and it was decided to make a number of changes in the operating methods of the company, which included the addition of new vessels. After the changes had been made, Stanley Dollar continued to take an active part in the affairs of the company, although he also did his share of executive work in his father's company.

His activities attracted the attention of the shipping world, so it is not to be wondered at that the government approached him in 1921 and discussed the possibility of having him form a company for the operation of a fleet of five 21,000-ton trans-Pacific liners the Shipping Board desired to place on the run between Seattle and the Far East. Later the Trade Routes Committee of the Shipping Board requested him to operate the boats; so he organized the Admiral Oriental Line. The boats are still running under this operation.

His next and most daring step was the purchase from the Shipping Board in 1923 of seven 21,000-ton sister ships, which he promptly placed on a round-the-world fortnightly sailing schedule from twenty-one ports of call located in almost as many countries.

When it became known that this service was to be actually started, shipping interests both in America and across the water eyed Stanley Dollar with a mixture of admiration and pity. No service of this sort had ever been attempted by any nation, let alone a private company; and many shipping men were of the opinion that the Dollar Steamship Line was taking on a staggering load.

Neither Stanley Dollar nor his father made any comment, but went quietly about the dispatch of their vessels. Even now they have nothing to say; but their record shows that since the President Harrison, first

of the fleet to circle the world, left San Francisco sixteen months ago there has been no deviation from the sailing schedule.

Such an achievement is noteworthy, both for the Dollars and the American nation. It definitely proves that a service which was considered out of the question has been made a success. It also proves that Stanley Dollar, like his father, knows what he wants, goes after it, and gets it.

Over and above all this looms the newest Dollar service, which is now being inaugurated between San Francisco and the Far East. The combination of this trans-Pacific service and the round-the-world fleet permits an American liner to depart every Saturday at 4 o'clock from San Francisco for the Orient. And because trade on the Pacific Ocean will one day far exceed that of the Atlantic, the pioneering now being done on the Pacific by the Dollar Line is laying a firm foundation for American commercial precedence in the days to come.

Now that the forward strides made by Stanley Dollar during the brief span of five years have been told, it seems fitting to swerve aside and give a word picture of this man who has so quietly and persistently worked his way to leadership in marine circles. Such a picture has been given us by one of Stanley Dollar's associates in the following words:

"Without a doubt, determination and driving force have been the principal outstanding attributes which have carried him to success. The instant he speaks you are aware of this; and then his positiveness, though the broad manner in which he expresses himself, discounts all possibility of narrowness. Though every inch an executive, he does not allow his brisk manner to degenerate into 'snappiness.' His fund of humor is a refreshing oasis in the whirl of business life because it crops out unexpectedly and is not the sort which sears.

"There is nothing studied nor curt about this man. He is not one of those men who erect a screen of reserve around themselves behind which they peep out at their fellow men. On the contrary, Stanley Dollar is easy to approach, direct in the expression of his opinions, and, though analytical, a man of the utmost simplicity. In conversation he will talk freely on any subject but himself, and the ease with which he discusses world conditions attests a man of keen discernment. He does not feel that the big things he has done in the steamship business are worthy of particular attention because, as he phrases it, 'Our company has grown so gradually that any new service we start is just a matter of increased routine.'

"Men who transact business with him will tell you that he is a fighter who plays fair and who, when he wins, refuses to crow. His father is his counselor, whose advice he seeks on all vital matters, and the mature wisdom of his parent is reflected in many of the things he has done."

With these facts briefly recorded it is not to be wondered at that the Dollar Line has grown nor that the Shipping Board has expressed, by its most recent sale, the confidence it reposes in the ability of Stanley Dollar as being one of the principal factors in directing the growth of trade on the Pacific Ocean.



R. STANLEY DOLLAR, A NEW POWER IN INTERNATIONAL SHIPPING

THE DOLLAR STEAMSHIP SERVICES

Twelve first-class passenger liners, with combined length of more than a nautical mile, operated under the Dollar house flag, give weekly service from San Francisco to Orient and Round-the-World

ROBERT DOLLAR for many years has predicted the supremacy of the Pacific Ocean in the world's shipping. During those years he has labored and planned to bring about the fulfillment of his prediction. On May 16, at the age of 81, he left San Francisco for another world tour with great energy and enthusiasm bent to his one great aim; the advancement of American prestige in Pacific Ocean international trade.

The manner in which his company is carrying out his ideals is self evident. During the last five years, Stanley Dollar, true son of his father, has taken hold of the management of the major portion of the Dollar interests. His energy and business ability combined with his father's experience and foresight has made possible the purchase and operation of two of the finest fleets of freight and passenger liners which have ever sailed under the American flag.

The first of these fleets was acquired in 1923 when Stanley Dollar purchased seven of the 522-foot type "President Liners" from the United States Shipping Board and placed them in a fortnightly round the world service. This service touches 22 ports on four continents and when inaugurated constituted a unique and unprecedented experiment. The first sixteen months of this service have proven very successful. The schedule has been maintained with good passenger and cargo lists and the shipping world has

turned from skepticism to wonder and admiration. With the Dollar interests, however, this stupendous undertaking was but one step toward the goal of making the American flag dominant among the merchant marine flags on the Pacific.

Before leaving on his latest world tour, Robert Dollar saw accomplished another great step toward this goal. Stanley Dollar, his son, had taken over from the United States Shipping Board the "535-type" passenger liner *President Lincoln*, the first of the group of five sister ships purchased from Uncle Sam, and it was on this vessel that the "sturdy Scotch Viking of the Pacific" sailed, to make arrangements in the ports of the Orient for filling these hulls with freight and passengers.

A Knot of Passenger Liners

Twelve first-class passenger and freight liners under one San Francisco house flag, over a quarter of a million tons displacement, with a combined length of a little more than one nautical mile, this fleet of seven "522-type" and five "535-type" *President* class liners enables a weekly sailing from San Francisco to the Orient and Round-the-World, under one American management and under a house flag and a name that in shipping circles have become synonymous with practical efficiency and commercial success.

Both types of the *President* class liners are comfortable sea boats. Both have ample reserve power to



Dollar Steamship Lines' passenger liner *President Lincoln*, first of five "535-type" *President* class passenger liners operated out of San Francisco in the Honolulu-Yokohama-Shanghai-Manila service of the Dollar Steamship Lines.



Dollar Steamship Lines' passenger liner President Polk after reconditioning and enlargement of passenger accommodations.

maintain sea schedules in all weathers. Both are luxuriously appointed as to passenger accommodations, and adequately fitted to furnish "good eats" and splendid table service.

The seven "522-type" will continue in round-the-world service, sailing from San Francisco every second Saturday at 4 p. m. and touching at twenty-two ports in four continents.

The five "535-type" will leave at the same hour on alternate Saturdays for Honolulu and Oriental ports and return.

This service will be American in all that word has come to mean on the Pacific Coast as signifying highest standards of comfort, safety, efficiency, and dispatch.

Improvement to Fleet

In this age of mechanical and electrical invention, all things become old with great speed. Steamers age

quickly and the steamship operator who would keep abreast of the times must be continually on the alert to take advantage of every opportunity for the betterment of his fleet. Such an opportunity came to the Dollar Steamship Lines in the recent overhaul of the "522-type" steamship President Polk. This opportunity was seized with characteristic energy. Wm. J. Brady of San Francisco, who has for many years supervised such work for the Dollar Steamship Company, was dispatched to New York to take charge of the work. In cooperation with Naval Architect Theodore A. Ferris of New York, plans and specifications were laid out and bids taken. Newport News Shipbuilding & Drydock Company was the successful bidder.

Demand for passenger accommodation on the round-the-world service is larger than capacity. It was therefore determined to enlarge the superstructure on the President Polk to almost double the passenger accommodations. Continuation of the superstructure eliminated cargo hatchways Nos. 5 and 6. Large side ports were installed at the main deck level to reach the cargo holds formerly served by the two hatchways. To serve these side ports, two electric Lidgerwood-Westinghouse cargo winches were installed on the boat deck.

This rearrangement of staterooms gave opportunity to install an improved system of forced ventilation, so that an abundance of fresh, cool air is insured in every stateroom at all times. Large air ports of the new Stewart type, 26-inch diameter, installed in all rooms, are a further guarantee of good ventilation.

Suites-de-luxe

Five additional suites-de-luxe are fitted on the promenade decks. Each of these suites consists of a large sitting room, a bed room, a bath room, and a trunk room. The bath rooms in white tile, fitted with alcove showers, built in tubs, and the very finest of J. L. Mott fittings, are as fine as we have seen afloat or ashore. One refinement seldom if ever before seen afloat



Signing the contract for the five "535's". Sitting, Captain Robert Dollar and J. Harry Philbin, in charge of sales for the United States Shipping Board. Standing, left and right, W. F. Fitch and F. W. Relyea, United States Shipping Board; center, R. Stanley Dollar.

is the fitting of J. L. Mott metal frame plate glass doors on the shower recess. Furnishings, draperies, and carpets in the suites were personally selected by Mrs. R. Stanley Dollar, and show the feminine touch in the homey atmosphere they give to these rooms. The beds are Simmons all metal, fitted with Simmons coiled spring ventilated mattresses, and are of ample width. An innovation in stateroom equipment, on Pacific Coast, at least, is the trunk room. This is a small finished compartment to which baggage may be delivered through a lock door from the corridor and to which the occupants of the suite can have access through an inside door. Thus safety of baggage and convenience of passengers are assured and at the same time trunks and valises are out of the way and out of sight.

Changes to Superstructure

The enlargement of the superstructure much improves the external appearance of the President Polk, and this effect is emphasized by the new stack, which is oval in shape and is 17 feet fore and aft by 11 feet beam and five feet higher than the former nine-foot diameter stack. The longer house also gives a fine large open play space on the boat deck and longer promenades on both promenade decks.

Both promenades are enclosed at the forward ends and are fitted with the Beclawat windows, furnished by the Kearfott Engineering Company of New



Stairway, social hall, steamship President Polk.
The floor covering is Selbalith.

York. These windows, formed from a single piece of plate glass, sliding in felt lined brass grooves, are supported by spring loaded lazy tongs enclosed in the housing below the rail. So accurately are they balanced that a child can raise or lower the glass, and they are fitted with waist rail tighteners, adjusted so that one-half turn of the lever securely fastens the window in any position.

The dining saloon is enlarged proportionately to the passenger accommodations, as are all the public rooms; so that a capacity list can eat at one sitting and can comfortably occupy their time at games, music, smoking, or lounging.

The galley and pantries are fitted with all the latest devices in electric cooking appliances, oil burning ranges, and dish washing, drying, and handling equipment. A Hall-Brunswick carbon-dioxide refrigerating machine takes care

of the fresh meat, vegetables, and fruit, ice-cream, and milk storage, and the cold box in the pantry is connected with this system, so that it can be kept at any desired temperature. The bulkheads in way of fidley and of engine room hatch have been heavily insulated with cork composition to prevent radiation of heat into passenger accommodations.

Radio Equipment

All of the President class liners now owned by the Dollar Steamship Lines are equipped with the continuous wave type of radio equipment, as developed by the Federal Telegraph Company. In connection with Federal marine stations at San Francisco, Portland, and Los Angeles, it is possible for these ships to be in daily communication with the home office from all points in the Orient.

On the first trip of the "502-type" steamship President Harrison, she reported nightly and direct from all Oriental points and to the distance of 8500 miles from San Francisco. This wonderful record is due to the constant improvement of the receiving equipment of the Federal shore stations under the direction of Dr. Frederick A. Kolster, chief research engineer.

A Floating Hotel

In accordance with Pacific Coast practice, the main entrance is fitted to convey the impression that the passenger is entering a first-class hotel. The purser's office, furnished like that of the hotel clerk, is located in the



A suite de luxe on the steamship President Polk.



A suite-de-luxe

One of the
numerous
private baths.At left: Typical stateroom
aboard a Dollar President
liner. Below: Good eats.

lobby, and bell boys handle the baggage room keys, room orders, and messages.

Altogether the steamship President Polk, as to finish, furnishings, ventilation, sanitation, and arrangement of passenger accommodations, is on a par with the finest afloat.

Guarantee of Permanence

This policy of betterments to the fleet and increase of capacity is a sure guarantee that the Dollar Steamship Lines feel themselves to be on a permanent basis, and that they will continue to serve the traveling public and the shipper with better facilities and greater efficiency.

The big Dollar freighters in conjunction with the Dollar President liners are serving every important port on the Pacific. Hardly a day passes but one of these vessels clears from or enters a Pacific Coast





port. Their manifests and passenger lists tie up San Francisco very intimately with the entire world. Commercially, they bring millions annually to the Pacific Slope. Politically they lead the nations of this war-troubled world into more intimate friendly contact and into a more sympathetic appreciation of the other fellow's viewpoint.

Robert Dollar

A man diligent in business shall stand before kings. In the little city of Falkirk, Scotland, some 75 years ago, a bare-foot lad learned that sentiment from his mother's Bible. His life since has been a living demonstration of the truth of the old proverb. His "diligence" is the marvel of all with whom he is associated, and he has earned the respect and confidence of many crowned heads, and now stands before the world as America's greatest shipowner. Still displaying the same "diligence" that has brought success, at the age of 81 his coat is off and his arms bared for the greatest struggle



Wm. I. Brady, prominent in Pacific Coast marine engineering circles and president of the Eureka Boiler Works, who is responsible for maintenance on the Dollar Fleet.

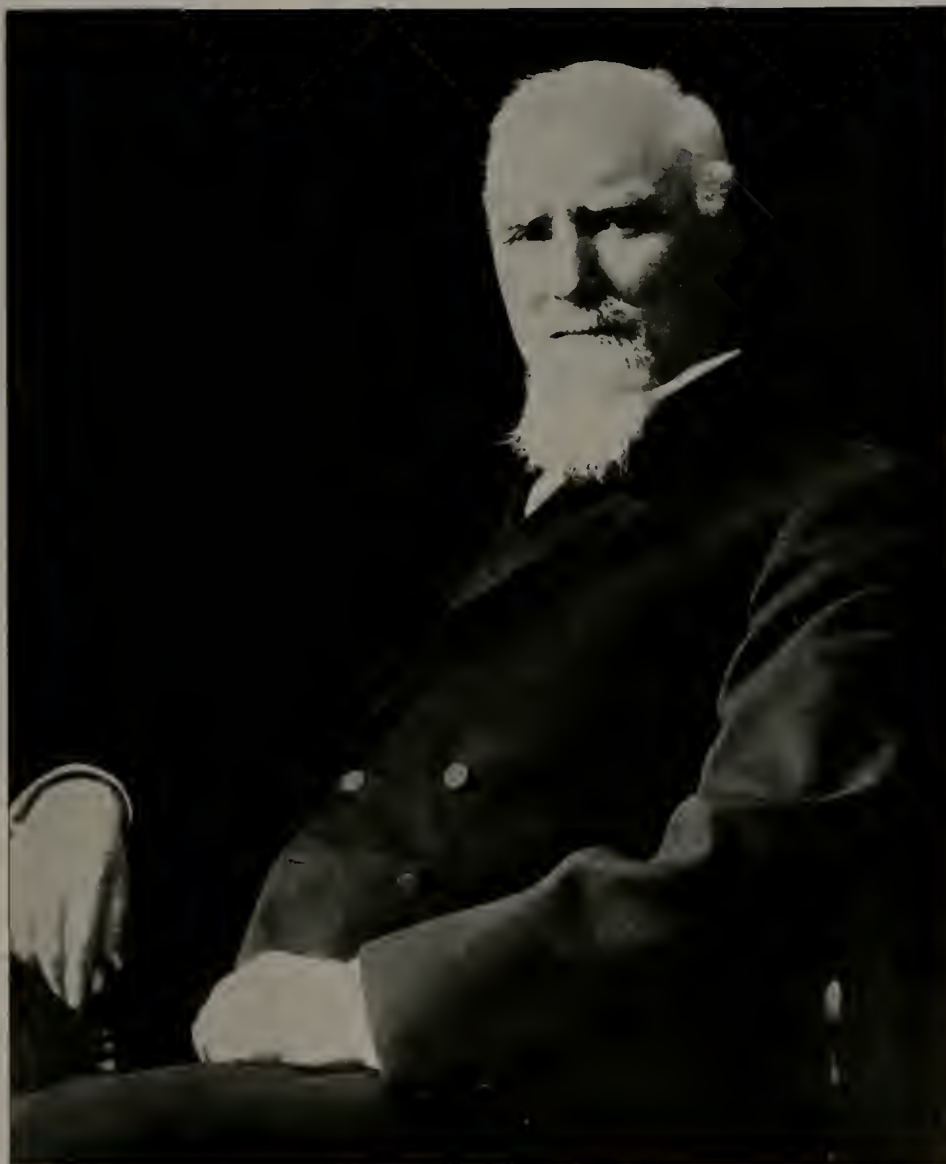
possibly in his career of striving—a struggle that brings him into direct competition with some of the strongest commercial powers of Europe and Asia. Our hats are off to him, and our hearty Godspeed goes with him as he goes forth to this great task.

San Francisco Home Port

The home port of this magnificent fleet of world trade ships is San Francisco. The service gives to this western metropolis an invaluable dependable connection with the Oriental markets. The sea traders of the world are rapidly sensing the importance of the Pacific Ocean theatre with its teeming millions just now awakening to modern progress, modern standards of living, modern needs, and modern machinery.

The Dollar Steamship Lines, backed by long experience and adequate capital and operated with Dollar foresight, energy, and perseverance, will put the American flag in the forefront of the struggle for commercial supremacy in the Pacific Ocean.





CAPTAIN ROBERT DOLLAR, FOREMOST REPRESENTATIVE OF AMERICAN SHIPPING

SHIPOWNERS' CONFERENCE

The American Steamship Owners' Association, the Pacific American Steamship Association, and the Shipowners' Association of the Pacific Coast Discuss American Maritime Policy and Make Important Suggestions for the Betterment Thereof



J. C. Rohlfs



R. W. Myers



Hugh Gallagher

ON April 14, 1924, the American Steamship Owners' Association, 11 Broadway, New York, issued an invitation to the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast members to attend a meeting in New York, beginning April 27, to consider the various problems with which American shipowners are confronted in the conduct and furtherance of the shipping industry, and particularly in connection with the continued operation of the Shipping Board, which, despite the provisions of the Merchant Marine Act of 1920, has not made satisfactory progress in the development of a privately-owned merchant marine in foreign trade and the retirement of the Government from the shipping business. The new administration, however, indicated their desire to see the Government out of the shipping business at the earliest practical moment, and as the problem of its retirement is a business one, and not political, those in governmental authority asked those engaged in the business of practical shipping for suggestions as to the means by which this could be ultimately accomplished.

The members of the American Steamship Owners' Association, the Pacific American Steamship Association, and the Shipowners' Association of the Pacific Coast are engaged in one of the most important phases of American business. Ramifications of the ocean shipping business reach into every port of the Atlantic, Gulf, and Pacific coasts, not to mention the inland sections of the country; and surely these associations should be the spokesmen for the American shipping world, and their recommendations as to the best methods of promoting maritime commerce should be received with respect and regarded as authoritative.

Leadership in American maritime affairs should be with such associations, and when they take a position with candor and due consideration on matters mari-

time, these associations should have solidly behind them the power and influence of the maritime states. The welfare of those states is intimately affected by the prosperity of the shipping business, and any measure which promotes shipping is in their interest. The Senators and Representatives of the coastal states should therefore support the proposals put forth by the associations for the promotion of American shipping.

Accordingly, in response to the invitation from the American Steamship Owners' Association, Captain Robert Dollar, president of the Pacific American Steamship Association, appointed the following committee to attend

J. C. Rohlfs, Standard Oil Company (Calif.), chairman; H. F. Alexander, Pacific Steamship Company; R. Stanley Dollar, Robert Dollar Company; Hugh Gallagher, Pacific Steamship Company; J. E. Cushing, American Hawaiian Steamship Company; while F. J. O'Connor, president of the Shipowners' Association of the Pacific Coast, which comprises in its membership operators of vessels mainly engaged in the lumber trade, appointed the following committee.

Ralph Myers, Hobbs Wall & Company; L. C. Stewart, Sudden & Christenson Company.

The Pacific Coast, therefore, presented a formidable array of shipping talent, but unfortunately, owing to stress of business, Messrs. H. F. Alexander, R. Stanley Dollar, J. C. Cushing, and L. C. Stewart were unable to attend the daily meetings, which left the Pacific Coast problems in the hands of Messrs. J. C. Rohlfs, Hugh Gallagher, and Ralph Meyers. These latter gentlemen religiously attended the meetings day and night, beginning on April 27 and ending on May 8, 1925.

The preamble and recommendations hereafter set forth are the result of this conference.

RECOMMENDATIONS OF AMERICAN SHIP-OWNERS' CONFERENCE

THE American Steamship Owners' Association, Pacific American Steamship Association, and Shipowners' Association of the Pacific Coast regard it as essential that the United States have an American merchant marine of sufficient size and of an adequate character for national defense and the promotion of foreign trade. Merchant ships trading to the nations of the world are the greatest emissaries of peace.

While the members of the associations, in the light of their knowledge of the many technical and troublesome problems involved in the conduct of the shipping business, have always held to the belief that a permanent, successfully operated merchant marine can only be realized through privately owned and operated ships, it regards as conclusively demonstrated by the experience and results of the government's operations during the past five years that the government cannot efficiently conduct a shipping business, and that, with the exception of a few services, no marked progress has been made toward the goal of a permanent merchant marine in foreign trade, notwithstanding the expenditure of millions of dollars from the public treasury. The associations believe it is conservative to say that further efforts along the lines followed in the past will not only fail to place American shipping on a successful and permanent basis, so as to fulfill the objects of a merchant marine, but, instead, hope of ever having a privately owned merchant marine, adequate for national requirements, will be destroyed, while the merchant ships which the government now owns will age and deteriorate and the government will add to the hundreds of millions of dollars already spent. It will mean the end of the high aspirations of a people, whose money will have been wasted to no purpose, because the problem of creating and establishing a merchant marine on a sound and enduring basis has been undertaken in the wrong way.

But the mistakes of the past are not without remedy. On the contrary, the associations believe that if this business problem is taken in hand in a businesslike way a merchant marine adequate for all necessary purposes of national defense and trade can be established and successfully carried on under private ownership at a cost to the government far less than its present losses.

American Handicap

It is certain, however, that this cannot be done by the private shipowner unaided. Under existing differentials in fixed charges and costs of operation, upkeep and overhead, as compared with those of foreign competitors, and under the more burdensome provisions of the navigation laws, private owners must have assistance and relief. These items of higher costs in the ownership and operation of American ships in foreign trade largely exist in the following particulars:

- (a) Greater capital investments due to higher shipbuilding costs in the United States, with resultant larger interest charges, higher depreciations and increased insurance premiums.
- (b) Larger crews and higher wages in respect of both officers and crew.
- (c) More expensive food scale for officers and crew than required by foreign nations.
- (d) Fifty per cent duty on repairs made in foreign ports and higher costs of repair in American ports.
- (e) Unnecessarily burdensome and expensive inspection laws.
- (f) Numerous pay-day demands and provisions in the laws making it difficult to enforce discipline in foreign ports, and resulting in delays from dissipation and insubordination.
- (g) Government fines, resulting from smuggling of aliens, liquors and narcotics, despite every effort by shipowners to prevent them.

- (h) Greater costs of equipment and supplies.

- (i) Unfair admeasurement rules, resulting in increased Panama Canal tolls and port charges based on the tonnage of American ships.

- (j) Higher costs of overhead due to higher standard of wages in the United States.

To make it possible to meet these higher costs, the associations, after extended observations of the results of the methods pursued by the government, and after careful consideration of all phases of the problem, make the recommendations as to aids hereinafter set forth.

The aids generally to be outlined will be made possible by proper legislation, and, if the course suggested is carried out by private owners and government officials in a spirit of cooperation, the United States can have a merchant marine in all essential foreign trades which will not only meet the needs of national defense, but promote the welfare and prosperity of the people in all walks of life through the continuous development of the country's foreign trade. It will mean the attainment of the high aspirations so well expressed in the preamble of the Merchant Marine Act, 1920.

If aids are not granted, the associations are firmly of the belief that in due course the United States will not have an American merchant marine of any marked importance in foreign trade.

RECONSTRUCTION OF GOVERNMENT AGENCIES

The Shipping Board—A Regulatory Agency

- (1) That the United States Shipping Board be reduced to three members, to be appointed by the President without regard to political or geographical considerations, but with special regard to their business qualifications, one of whom shall have had commercial shipping experience.

- (2) That the Shipping Board so constituted be vested with such regulatory powers as are necessary to the promotion of an American merchant marine, similar to those regulatory powers conferred upon the Shipping Board by the Shipping Act, 1916.

The Fleet Corporation—A Liquidating Agency

- (3) That the Emergency Fleet Corporation, either in present or modified form, be continued in existence as an agency of the government to liquidate the government out of the shipping business at the earliest possible moment.

- (4) That the control of the Fleet Corporation be vested in the Secretary of Commerce, or in a newly-constituted department of marine, through a transfer of the stock of the corporation.

- (5) That the Fleet Corporation proceed to a complete liquidation of the government out of the shipping business as rapidly as possible, disposing of the ships on such terms and conditions as will help to maintain them in successful operation.

- (6) That pending complete liquidation, the Fleet Corporation be given supervision over the operation of those services that are found to be essential to national defense and the promotion of foreign trade.

THE DETERMINATION OF ESSENTIAL SERVICES

- (7) That the Secretary of Commerce, Postmaster General, Secretary of the Navy, Director of the Budget, and an American citizen experienced in shipping, appointed by the President, be created a special agency to determine the nature and extent of the services to be carried on by combination passenger and cargo ships, which are essential to national defense and the promotion of foreign trade.

- (8) That the Secretary of Commerce, Postmaster General, Secretary of the Navy, Director of the Budget, Chairman of the Shipping Board, and two American citizens ex-

periened in shipping, appointed by the President, be created a special agency to determine the type and amount of cargo tonnage required in the services to be carried on by cargo ships, which are essential to national defense and the promotion of foreign trade.

THE MAINTENANCE OF ESSENTIAL SERVICES

Direct Aids

(9) That the special agency created to determine the necessary combination passenger and cargo vessels be vested with authority to determine the amount of mail payments necessary to be made to the owners of the ships in such services, in order that such ships may be operated therein on a commercially successful basis, and that the Postmaster General be authorized and directed to enter into contracts for the carriage of mail and the payment of compensation therefor, as may be approved by said agency, subject to appropriations therefor by Congress.

(10) That the special agency created to determine the necessary cargo services be vested with authority to determine the amount of compensation necessary to be paid to the owners of the ships in such services, in order that such ships may be operated therein on a commercially successful basis, including payments for carrying the mail where the ships in such services can be utilized for that purpose, and that the Secretary of Commerce be authorized and directed to enter into contracts for the payment of compensation for the operation of the ships in such services, and where such ships are available for carriage of mails, that the Postmaster General be authorized and directed to enter into contracts for such carriage and for the payment of compensation therefor, all as may be approved by said agency, subject to appropriations therefor by Congress.

(11) That the aforementioned direct aids should be given only as long as necessary to ensure the continuance of the respective services in the face of foreign competition, but that in the sale by the government of any trade route and the ships operated therein, the mail contracts should be included and sold as an asset of the route.

Indirect Aids

Amendments to Seamen's Act

(12) That the Seamen's Act (Sec. 4530, Rev. St.) be amended so as to provide that the master of a vessel will not be required to pay wages to any seaman in a foreign port, if the head of the department in which the seaman is employed reports to the master, and signs an entry in the ship's log to the effect, that the seaman came on board at the last port at which the ship touched in an intoxicated or doped condition, or was found to have liquor or narcotics in his possession on board the ship, or otherwise disobeyed orders, or did acts which interfered with the discipline of the ship, or threatened her safety; and further, that the provision for the setting aside releases be deleted.

(13) That the Seamen's Act be further amended in the following general particulars:

(a) That Section 4516 be amended so as to provide that in case of loss of seamen from desertion or casualty, the master shall only be required to ship a number equal to the number of those whose services have been lost, if they are procurable by reasonable effort, and if not procurable, that the ship may proceed to the next port if, in the opinion of the master, it is reasonably safe to do so.

(b) That Section 4516 be amended so as to make the provisions requiring the division of seamen into two watches and firemen, etc., into three watches, applicable to vessels of 300 or more tons, instead of 100 tons and upwards, and further to provide that the crew may be used for the ordinary work incident to the upkeep, sailing and management of the vessel.

(c) That the provisions of Section 4516 providing for the discharge and payment of wages to seamen if the master shall fail to comply with the section be amended so as to exclude licensed officers.

(d) That Section 4559, providing for a complaint in writing that the vessel is unsuitable to go to sea, be deleted, and the determination of the seaworthiness of vessels be left to the United States Steamboat Inspection Service and the

American Bureau of Shipping; or, if the section is not deleted that notice of unseaworthiness shall be filed immediately upon arrival of the ship in port, and that a penalty be prescribed for malicious misrepresentation.

(e) That paragraph "fifth" of Section 4596 be amended so as to vest in the master the discretion of penalizing a seaman for wilful disobedience or riotous conduct by discharging him at the first port touched, and paying his wages, and providing him with transportation or employment on a suitable vessel bound to a port in the United States, or of retaining him in board until the port of discharge under the articles is reached, and then proceeding against him as now provided by statute.

(f) That paragraph "seventh" of Section 4196 be amended so as to provide a severe penalty for any person who wilfully places the lives of crews or passengers in jeopardy, and increasing the penalty for similar conduct designed to injure property.

(g) That paragraph "eighth" of Section 4196 be amended so as to relieve the shipowner from penalty for smuggling by the crew, officers or master, provided the owner can show that he has exercised reasonable care to appoint a competent master and to prevent smuggling.

(h) That Section 4500 be amended so as to require consuls to investigate cases of insubordination before the scheduled departure of the ship, and if the same cannot be completed before departure that the case may be carried over to the next port, or the consul may cable his findings to the consul at the next port at the expense of the ship or the seaman, whoever may have been found against, and the consul so advised shall have full power to act as if the case first came before him.

(i) That Section 4611 be amended so as to make it inapplicable to an encounter between members of the crew, and to provide for the punishment of seamen who attack officers.

(j) That paragraph "tenth" of Section 4611 be deleted and the provisions thereof incorporated in the statute providing for ship's rations.

(k) That paragraph "twelfth" of Section 4611 be deleted and provision made for holding seamen responsible for debts the same as other persons.

(l) That paragraph "thirteenth" of Section 4611 be amended so as to provide that any boy of sixteen years of age, except when physically disqualified, shall be permitted to engage himself to a ship in any minor capacity, ultimately leading to the following of the sea as a vocation, and authorizing the granting of A. B. certificates after one year's service at sea, provided, in the opinion of the master and the head of the department of the ship in which he has worked, the applicant is qualified to perform the duties of an able-bodied seaman.

(m) That the Seamen's Act be amended in the further particulars recommended in the associations' reports to the Shipping Board on codification of the Navigation Laws.

Amendment of the Navigation Laws

The associations have already made recommendations to the Shipping Board for changes in the Navigation Laws, in connection with the Board's codification of the laws. Accordingly, the associations recommend:

(14) That the Navigation Laws be revised in the respects suggested in their reports to the Shipping Board on codification of the Navigation Laws.

Immigration Laws

(15) That the provisions of the Immigration Laws applicable to alien seamen be amended to harmonize with the Seamen's Act, and so that shipowners will not be burdened with undue expenses; that the regulations of the Immigration Service be revised and made sufficiently plain so as to be uniformly applied in all ports of the United States; and that effort be made to develop a better spirit of cooperation between government officials and the representatives of shipowners.

Duties on Repairs in Foreign Ports

(16) That Section 466 of the Tariff Act of 1922, imposing a duty of 50 per cent on repairs to American ships in foreign yards, be repealed.

Panama Canal Tolls

(17) That the Panama Canal Act be amended so that the admeasurement laws and the rules promulgated for the enforcement of the same will not place American ships at a disadvantage with foreign ships, and to adjust the tolls on partially loaded ships.

(18) That the Panama Canal be kept opened for the passage of vessels during all hours of day and night, except when the canal is in such condition as to render navigation unduly hazardous.

(19) That the Panama Canal Act be amended so as to provide that no tolls shall be levied upon vessels passing through the canal engaged in the intercoastal trade of the United States.

Extension of Coastwise Laws to the Philippines and Other Island Possessions

(20) That representation be made to the President of the United States of the desirability of fixing a date for the going into effect of the coastwise laws of the United States with reference to the Philippine Islands and other island possessions of the United States, as soon as the President deems it expedient.

Elimination of Government Competition

(21) That title VI of H. R. 10682 introduced by Congressman Edmonds in the 68th Congress, providing for the termination of the existing army and navy transport services, or a similar measure, should be enacted.

(22) That the government should retire from the shipping business now carried on by the Panama Railroad Steamship Company between ports of the United States and Panama and the Canal Zone.

(23) That all government officials and employes should preferentially travel, and all government cargo should be carried, in privately-owned American ships.

Establishment of a Naval Reserve

(24) That active steps be taken to encourage officers and seamen of the merchant service to join the Merchant Marine Naval Reserve authorized to be organized by the Naval Reserve Act, approved February 28, 1925.

(25) That there be established and maintained under the supervision of the Secretary of Commerce seven sailing school ships, with auxiliary power, two of which shall be stationed on the Pacific Coast; one in the Gulf, three on the Atlantic Coast, and one on the Great Lakes, to train young men for the merchant service.

(26) That men honorably discharged from the navy, after sufficient service in the deck or engine room departments to enable them to pass examinations for licenses as third officers or third assistant engineers, shall be entitled immediately to receive such licenses, and that A. B. certificates shall be issued to all navy men immediately upon honorable discharge from navy service.

Personnel

(27) That the personnel on American ships be reduced to a parity with the requirements of the other principal nations.

Inspections

(28) That the laws and rules and regulations governing the organization of the Inspection Service and the inspection of steam vessels be revised in accordance with the recommendations heretofore made to the Shipping Board in connection with its codification of the Navigation Laws.

Quarantine

(29) That quarantine stations be established at all of the principal ports of the United States and its possessions, or, where this is not practicable, that fumigation by competent private companies under regulations prescribed by the public health service be accepted when such fumigation is performed, and evidence thereof is certified as required by the Bureau of Public Health.

(30) That the Bureau of Public Health shall permit a vessel arriving at a United States port directly from another such port, which is rated as a clean port, to enter without requiring her to undergo examination.

Depreciation Charges

(31) That the Bureau of Internal Revenue amend its regulations so as to permit shipowners to provide in their accounts a depreciation charge on a unit basis that will give

consideration to the service in which the vessel is engaged, to cost of construction, and to all other elements that should be properly considered in fixing the service life of the ship, and that shipowners should be permitted to take credit, in computing income taxes during the service life of the ship, in profitable years, of losses incurred in other years.

(32) That American citizens who have purchased ships at high prices, or who have built ships in American shipyards at high costs, be allowed in arriving at their net earnings for income tax purposes, to deduct from their taxable profits such amount of the capital investment in the ships as will reduce the capital investment to the basis of present replacement cost after making proper allowance for depreciation for age.

Transfer of Ships to Foreign Registry

(33) That, except in times of national emergency proclaimed by the President, American vessels may be transferred to foreign registry without restriction, provided, that vessels purchased from the government with restrictions, or at less than world market prices prevailing at the time of purchase, shall not be transferred to foreign registry during the period of such restriction or within five years from the date of purchase.

Discriminatory Duties, Etc.

(34) That no attempt now be made to enforce discriminatory duties or similar measures, but that no commercial treaties be negotiated or concluded which shall contract away the right to give to American ships, when necessary, and at an opportune time, the support and protection which might flow from the enforcement of such preferential measures.

CONTINUANCE OF SHIPPING BOARD SERVICES

(35) That, pending the enactment of legislation which shall provide such aids as shall give assurance that American ships can be operated with commercial success in foreign trade, the Shipping Board should—

(a) Cease operating any service which does not give reasonable promise of becoming self-sustaining, unless the Shipping Board, by and with the advice of the Secretary of Navy, finds that the maintenance of such service is strategically necessary to national defense; and,

(b) Place the operation of the other services, which are deemed essential to national defense and the promotion of foreign trade, in the hands of American citizens—preferably those who have had the courage to invest their money in the shipping business—who give satisfactory evidence of their capacity and willingness to buy the ships operated therein as soon as they can be made commercially successful.

DISPOSITION OF LAID-UP VESSELS

(36) That the government's laid-up ships, which have no present or prospective value as commercially successful instruments of American commerce, be sold for scrapping, either in the United States or abroad, and that the salvage therefrom be covered into the United States treasury.

(37) That the government's laid-up ships showing reasonable promise of having commercial value within such range of time that they will realize more to the government by sale for use, than by sale for scrapping, be maintained laid up in such manner as shall be economical and preserve the ships from unnecessary depreciation, and be thereafter sold as soon as possible to American citizens.

NEW CONSTRUCTION

(38) That the Construction Loan Fund be transferred to the control of the Secretary of Commerce, and be continued available, at a rate of interest not to exceed three per centum per annum, for future construction by American citizens of approved types of ships in American shipyards.

(39) That the Construction Loan Fund be extended to authorize the loan to American citizens of money from the fund, toward the cost of building new and approved types of vessels in American shipyards, to the amount of the difference between the cost of building similar vessels in American and in foreign shipyards, on the condition that any money so loaned shall be repaid to the government out of the proceeds of any insurance in the event of a total or constructive total loss of the vessel, or from the proceeds of

(Continued on page 275)

PORTS OF THE PACIFIC

IMPROVEMENTS DEVELOPMENTS ACTIVITIES

NEW TERMINAL AT PORTLAND

ON May 2 there was formally opened at Portland, Oregon, the new McCormick terminal, which has just been completed on the site of the old Ainsworth dock. This terminal is 1070 feet in length, with 903 feet under cover, and an area of 85,000 square feet. It is served by four tracks, two of which are surface tracks on the river side of the dock for loading and unloading from ship to car, and two of which are depressed tracks for loading and unloading freight from interior points across the dock. The dock has a dead weight cargo capacity of 17,000 tons. It has all the modern equipment for freight handling and has berthing space for three vessels at one time.

On this dock are located the offices of the McCormick Steamship Company, also various facilities for the benefit of stevedores and other workers.

The building of this dock calls to mind several interesting features in connection with the building of the old Ainsworth dock, which was completed in the year 1880. This was before the days of railroads, for the first railroad completed into Portland was the Northern Pacific which entered September 8, 1883.

Those days the old Ainsworth dock was a very busy place. The Union Pacific Railroad terminated at The Dalles and the freight was carried by river steamer from that point to Portland. Vessels also ran down the Columbia River to Astoria and up the Willamette River as far as was possible, carrying freight and passengers both ways.

Freight exports, grain cargoes and the like, had to be loaded at this dock on the coastwise steamers for San Francisco, where they were placed aboard vessels for delivery to foreign destinations. This was due to the depth of the Columbia River between Portland and the sea, which at that time was only 17 feet in places.

Although the population of Portland in 1880 was only 17,577, the population of Oregon the same year was 174,769. The number of passengers handled across this dock during the year ending June 30, 1881, was 131,665, or nearly as many as the entire population of the state. Freight handled over the dock during the three years just previous to the opening of the railroad amount-

ed to approximately 1500 tons per day, which is a large volume of freight for a dock to handle even at the present time.

STOCKTON TO BE A SEAPORT

FOR five years the people of Stockton, California, have been working for favorable action from Congress in granting permission and funds for the dredging of the San Joaquin River from San Francisco Bay to Stockton and the creation of a deep water channel and harbor. This work is now bringing the long hoped for results.

The U. S. Board of Army Engineers, the Chief Engineer of the United States Army, and the Secretary of War have recommended to Congress that an appropriation of



A NEW DEEP-WATER PORT

A new development in the navigation of the southern end of San Francisco Bay was recently ushered in when the McCormick Steamship Company's steamers Silverado and Wallingford ran up the Redwood City slough channel to the plant of the Pacific Portland Cement Company and were loaded with cement for intercoastal shipment. Our two pictures show, above, airplane view of the cement plant looking up the channel towards Redwood City; below, aerial view of the cement plant looking down the channel towards the Bay. In both pictures the Silverado may be seen at the dock. The Pacific Portland Cement Company has an investment in this plant of over \$5,000,000.

\$3,700,00 be made for the purpose of deepening the San Joaquin River from the mouth of Stockton Channel to 26 feet, and furnish the necessary turning basin at Stockton, and also for the dredging of Mormon Channel. This recommendation was made contingent upon the city of Stockton furnishing the right of way necessary for setting back the levees of the river and a spoil area and paying \$1,307,500 towards the work of dredging. The city has further to furnish at least 1200 feet of bulkheading, transit sheds, railroad terminals, and freight handling machinery, subject to the approval of the Chief Engineer of the Army.

To show how much in earnest are the people of Stockton in wishing to have a deep-water channel right up to their doors, on April 21 they authorized a bond issue of \$3,000,000 as their part of the expense of such a project. The State of California has been asked to appropriate \$419,000 to provide for right-of-way.

PACIFIC PORT NOTES

A celebration was held on May 2 along the Embarcadero, San Francisco, when the new vehicular subway was completed under the Embarcadero at the foot of Market street. The subway was built for the purpose of facilitating the heavy traffic between the wharves situated on the north and south sides of the Ferry building.

Redwood City, California, is now a seaport. Situated 25 miles south of San Francisco on lower San Francisco Bay, Redwood City has now a channel 16 feet deep at low water up to the plant of the Pacific Portland Cement Company, which has invested \$5,000,000 in a plant and wharf. The McCormick Steamship Company's steamers Silverado and Wallingford were the first two to use the new port facilities.

Richmond, California, City Council has called for bids for the construction of Wharf No. 2 on the Inner Harbor and for dredging from the bulkhead line to the Inner Harbor Channel.

Vallejo, California, has leased a portion of waterfront to the San Francisco, Napa and Calistoga Railroad, who will construct a new terminal for the joint use of the railroad and steamer line from San Francisco.

Oakland. Bids have been asked by Major John W. W. Schulz, in charge of Rivers and Harbors Commission for the U. S. Army, with headquarters at the Custom House, San Francisco, for dredging the Oakland Estuary to a depth of 30



The freight liner Lewis Luckenbach with the largest single shipload of lumber ever taken from Puget Sound.

feet and a width of 500 to 600 feet. Congress has appropriated \$884,000 for this work.

The Oakland City Council has also advertised for bids for a dike to be

Venice. Plans are being completed for a new jetty to extend a distance of 500 feet into the ocean at the foot of Avenue 51, to improve the bathing beach.

Los Angeles. New projects include: two new wharves to be built at the cost of \$77,000 by the Harbor Department. The Blinn Lumber Company will erect a dock adjoining its frontage at Wilmington, 700 feet in length, costing \$45,000. The Petroleum Export Corporation has completed plans to build a new oil loading station at the entrance of the East Basin on Terminal Island.

Seattle. On April 6, the first unit of the new Pacific Steamship terminal at Seattle was opened for operation. The terminal has already become one of the greatest and most active shipping centers on the Pacific Coast. When completed the terminals will consist of three ocean piers, each 1100 feet long and 168 feet wide. A passenger terminal and office building is located on that section of the unit already completed and in use. Each pier will have 990 feet of dockhouse 154 feet wide, steel-trussed and with galvanized iron roofing and siding. Every modern improvement for the quick and economical handling of freight to and from the ship is provided. The terminals were designed by Commander R. C. Brennan, operating manager of the Pacific Steamship Company.

Seattle Port Commission will build a two-story warehouse extension to the Lander Street terminal to cost \$50,000.

BIDS CALLED FOR LONG BEACH BREAKWATER

Plans and specifications for the construction of the \$3,500,000 breakwater and bulkheads to be built by the United States Army Engineers at Long Beach, California, were issued by Major R. G. McGlone, and bids will be opened June 26 at Long Beach. This work is the Government's share of a \$6,000,000 project for a combined Los Angeles-Long Beach harbor development. It is possible that separate contracts will be awarded for the construction of the breakwater and the construction of the bulkheads and moles.

built between Government Island and the Alameda shore of the Oakland Estuary to cost approximately \$12,000. This is a part of the plan for Inner Harbor improvement at Oakland and Alameda.

Alameda. The Encinal Terminals, Alameda, have announced that following the completion of the second unit of their terminal next September, work will begin on the third unit.

Crescent City, California. The harbor breakwater is to be surveyed and completed by the U. S. Army Engineers at a cost of \$400,000.

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

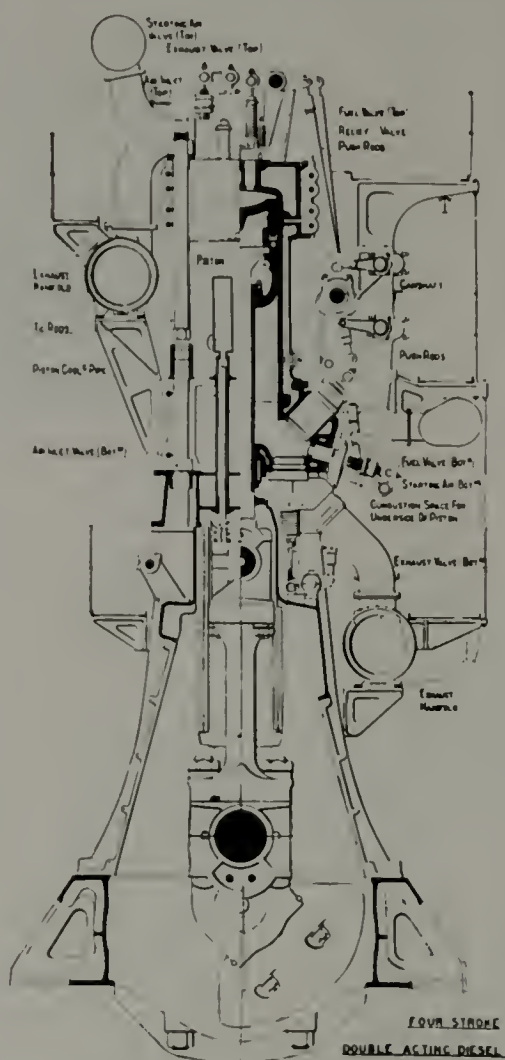
WORLD'S LARGEST DIESEL ENGINE

IN the April issue of Pacific Marine Review we illustrated and described the largest diesel engine yet built. Now here is another in June, which overtops the April engine, for we are told that the biggest marine oil engine yet constructed for installation in a ship has been built by Harland & Wolff. Six similar sets are being manufactured, and the first two will be placed in a 20,000-ton liner for the Royal Mail Steam Packet Company, which will be completed by the end of the year or early in 1926. The remaining four are for installation in similar passenger liners.

The motor is of the double-acting, four-stroke type of the Burmeister & Wain design and will develop 10,000 indicated horsepower or between 7500 and 8000 brake horsepower when running at 115 to 120 r. p. m. It has a bore and stroke of 840 m.m. and 1500 m.m., respectively, and is an 8-cylinder design driving its own injection air compressors, of which there are two located at the forward end of the motor.

So far as the tops of the cylinders are concerned, they might represent an ordinary Burmeister & Wain single-acting engine, for there is no difference in the arrangement either of the valve gear or the cylinders and cylinder heads. It is at the bottom that the novelty lies. There is a main cylinder cover through which the piston rod passes, this piston rod being surrounded by a cast-iron sleeve to protect it from the maximum temperature. Attached to the lower part of the cylinder is a combustion chamber which projects to the right, as seen in the sectional illustration. On the top, inclined at an angle, is the air inlet valve; below, and vertically located, is the exhaust valve; whilst slightly out of the horizontal are arranged the fuel valve and starting air valve. Thus the whole of the combustion takes place within this chamber when the piston reaches the bottom of its stroke.

The valves are actuated from the single camshaft, which is located between the two sets of valves, push rods being utilized for transmitting the motion from the cams to the valve levers. On this camshaft is an ahead and astern cam for each separate valve; that is to say, 16 cams for every cylinder, or 128 for the whole engine. When reversing, the camshaft is moved fore and aft, bringing the astern cams into action instead of those for average operation.



Sectional view of the Burmeister & Wain 4-stroke, double-acting diesel engine, 10,000 indicated horsepower at 115 revolutions per minute.

The whole of the control is effected by means of two levers; one actuates the reversing mechanism, the other first admits starting air to the cylinders and then cuts off the air supply and allows the fuel to be injected into the combustion cylinders. Actually, this second lever is divided into two to control the tops and the bottoms of the cylinders independently, but usually the two levers are worked together.

Apart from its size and the arrangement of the valves at the bottom just described, there is really nothing very unusual about the engine. Lubricating oil is employed for cooling the pistons, a system that is now being adopted to a considerable extent by Burmeister & Wain, although water is now common with other types of engine. For the cylinder heads and jackets, fresh water is utilized, but all the pumps for lubrication and cooling are independently operated by means of electric motors.

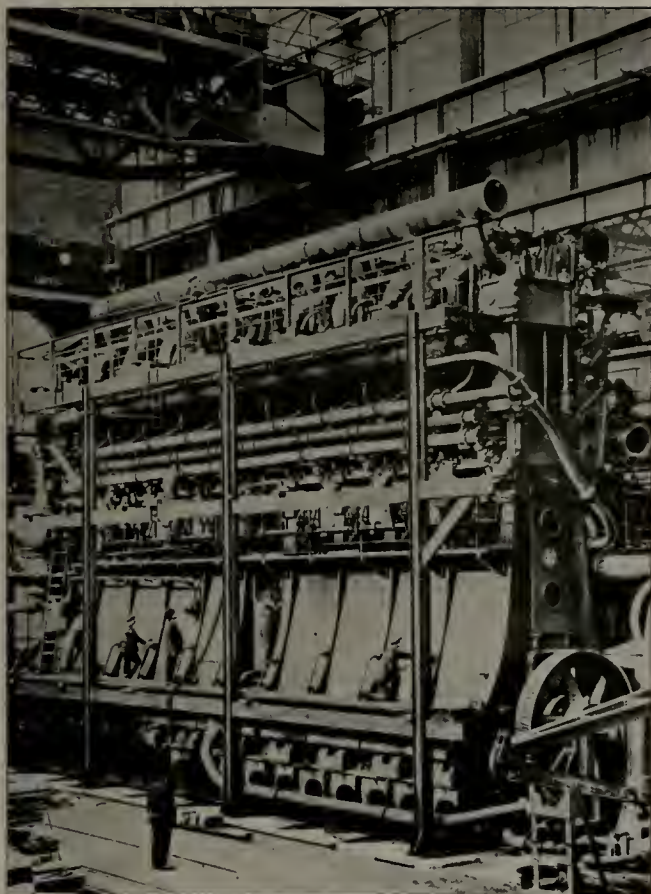
The liner in which the first two of these engines are to be fitted, will be one of the finest vessels of her size afloat. She will be 630 feet long with a beam of 72 feet, and will have a gross tonnage of between 21,000 and 22,000. The speed will be in the neighborhood of 15 knots, and it is anticipated that the daily fuel consumption for all purposes will not exceed 70 tons.

Burmeister & Wain have built more diesel engines and a greater

diesel horsepower for marine installations than any other of the world's engine builders. Any changes of design adopted by this firm are therefore of great importance to the marine fraternity and should be carefully followed by designers of diesel engines.

It is rather noteworthy that almost coincident with their adoption of a double-acting design for larger powers they have adopted also a lightweight trunk piston medium speed design for smaller installations. An example of this is shown in the illustration on the facing page, which gives a very good idea of the general appearance and size of the 2200 indicated horsepower 4-cycle engine of this type installed on one of the more recent Swedish motorships.

Wm. Cramp & Sons Ship & Engine Building Company, American licensees of Burmeister & Wain, are prepared to furnish either of these types as well as the standard marine diesel covering a very wide range of powers and applications.



The world's largest diesel engine in the erecting shop of the Harland & Wolff engine building plant, Glasgow.

EUROPE COMES TO AMERICA

AN American-European diesel engine connection of much significance has recently been arranged between Carels Brothers of Ghent, Belgium, and the Ingersoll-Rand Company of New York.

Ordinarily when such a connection is made, it is the American manufacturer who is acquiring the right to build, on this side of the Atlantic, some European type of diesel engine. In this particular instance, however, the matter is being reversed, and the Belgian concern has acquired the right to manufacture in Europe the well-known Ingersoll-Rand solid injection type of oil engine. This fact alone would make the connection of great significance, but when we consider in addition to this that Carels Brothers were among the first manufacturers in Europe to build commercial diesel engines as licensees under the original Diesel patents, and that this firm had previously developed world-famous large capacity producer-gas engines and had as large an experience as any continental European firm in the manufacture of stationary engines for industrial purposes, we realize that such a connection is indeed ushering in a new day.

Carels Brothers were organized in 1875. After successive periods of expansion they are now known as the Societe d'Electricite et de Mecanique.

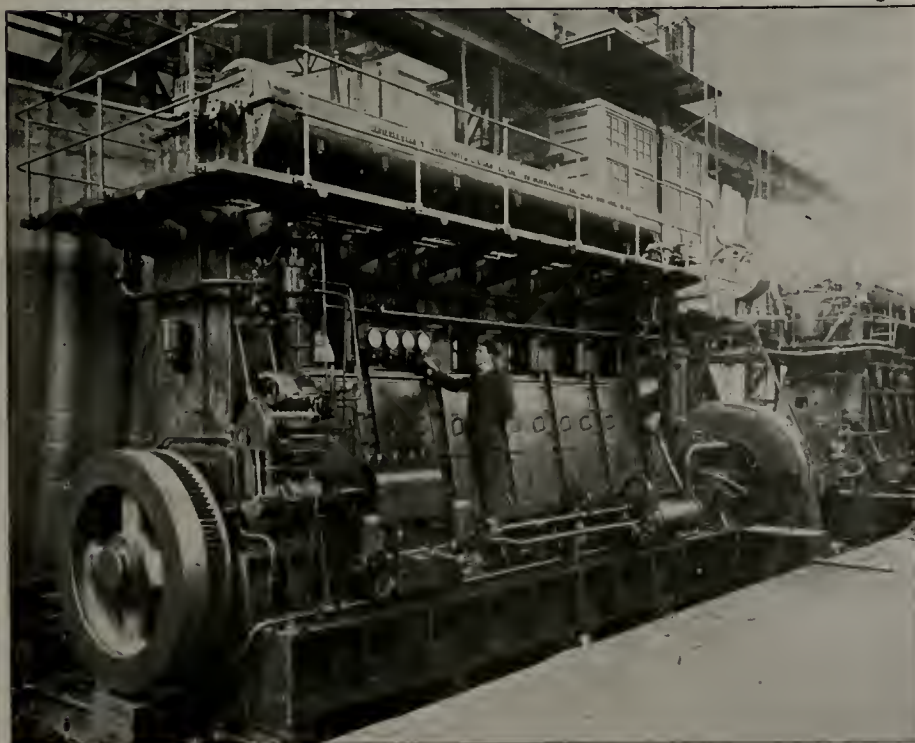
The Ingersoll-Rand Company feel a very justifiable pride that, under their organization, American engineers have developed a type of oil engine which has in a way turned the tide of technical application by giving to Europe, the land in which the heavy oil engine originated, a superior product in a special type of prime mover.

ELECTRIC GENERATOR CONTRACTS

Contract for forty-two 75-kilowatt electric generators to be installed on the fourteen steamers selected for conversion to motorships by the Shipping Board were awarded recently by the Department of Maintenance and Repair to the Ridgway Dynamo & Engine Co., Ridgway, Pa., on a bid of \$60,046.

The Kingsbury Machine Works, Philadelphia, was awarded contract for fourteen main thrust bearings for the diesel engines now being built, on a bid of \$39,200.

The Todd Dry Docks, Inc., Seattle, have purchased the steamer Patterson for \$10,000 from the United States marshall. The vessel was formerly owned by C. K. West of Portland, who had planned to convert her to diesel drive in the Todd plant and operate her out of the Columbia River.



A new European marine type diesel engine, the Burmeister & Wain light weight, trunk piston, 6-cylinder engine for installation on the Swedish motorship Borgestad; 2200 indicated horsepower at 154 revolutions per minute.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

A COMFORTABLE MOTOR CRUISER

A FINE addition to the fleet of motor cruisers on San Francisco Bay has just been completed at the yard of Geo. W. Kneass, San Francisco. This vessel, built to the order of Hart Weaver, is 50 feet long, 12 feet beam, and will draw 4 feet, loaded. She was designed by H. H. Foot, and from her lines should be a very comfortable and able craft.

Her interior fittings have been put in with due regard for comfort and convenience. Living quarters will consist of owner's cabin, to accommodate himself, his wife, and two children, a guest cabin to accommodate two, and quarters for the crew forward. Every possible inch of space has been utilized, but with no sacrifice of appearance. A large and well fitted kitchen, with oil-burning range, has been installed, so that extended cruises can be made without trouble as regards provisions. Fuel tank capacity of 500 gallons gives her a wide radius of operation. Fresh water of much over average supply is easily stored.

The conventional raised freeboard ensures comfort and freedom from spray wetting except in heavy gales. She is also fitted with a Stearns independent engine-driven generator of ample capacity to supply current for lighting and electric fans. A 12-foot mahogany dinghy sailer will be carried as a tender.

Her power plant consists of two Stearns 4-cylinder 75-horsepower gas engines. These will operate Cloverleaf propellers, and a speed

of 15 miles per hour can be maintained. Her stern bearings are of the Goodrich Rubber Company type, particularly adapted for sandy and gritty waters. She has also been supplied with a complete Lux fire

extinguishing apparatus. In all respects the vessel is complete and up to date. Being especially heavy in her timbers and material, she can stand heavy weather without bother or worry.

Boat Yard Notes

Anderson & Siemer's yard at Hunter's Point, San Francisco, recently launched a new sardine fishing boat, which will be fitted with the first of the Hicks type diesels. The vessel, built to the order of P. Mercurio of Monterey, California, will be used out of that port. She is 42 feet long by 12 feet 6 inches beam, and 4 feet 8 inches depth. Her construction throughout is most substantial. Particular attention has been given to the engine bed timbers, which are large for this size

of boat. The floors, too, under engines are solid. She is of the conventional type of sardine fisher, with a clipper bow and overhanging stern. Comfortable quarters for the operators, together with a heavy mast fitted with sail should it be needed, make her a very reliable sea craft no matter what the weather might be. Her engine is of 40 horsepower, manufactured by the Hicks Engine Works, San Francisco, and will give her a speed of around 11 miles an hour.



TWO SNAPS ON SAN FRANCISCO BAY

Above, a diesel workboat handling heavy barge at a San Francisco pier. Below, a corner of a houseboat row on the Alameda shore of the Oakland estuary. These houseboats have squatted on the shore line and are now being evicted by the United States Government in preparation for dredging operations to deepen and widen the channel and because of alleged bootlegging activities.

The barge *Iroquois*, owned by the Bay Cities Transportation Company, San Francisco, is at Anderson & Siemer's yards at Hunter's Point, San Francisco, being rebuilt in the way of an extended deck house, which will be 160 feet in length the full beam of barge and with a height of 11 feet. The work is being done for the Colby Steel Products Company of Seattle, who will use the *Iroquois* in their bay work. Besides the house extension, a freight elevator is being installed. This will take care of tides and allow the truckloads of freight to be run aboard at any state of the water level alongside. Motive power for the elevator is provided for by a Fordson tractor in the hold, whose wheels have been taken off and drive shafts for the elevator gear arranged in place. It was at first contemplated to fit electric motors for the elevator, but this was changed to gas engine power, as electricity could not be obtained at all the wharves where she will load and discharge.

* * *

One of the new 2-cylinder gas engines, manufactured by Hicks Engine Works, San Francisco, will be installed in the latest addition to the fishing fleet of A. Paladini, Inc., San Francisco. This vessel is 35 feet in length, 10 feet beam, and 3



A new 35-foot fish boat of typical San Francisco Bay design building for A. Paladini, Inc., at the Anderson & Siemer yard, San Francisco. This boat will be powered with a new type Hicks gas engine.

feet 4 inches depth. She will be used in the fishing business off the Golden Gate, being very strongly constructed to stand up against the rack and strain of the work. Her engine of 12 horsepower has several novel and good features developed from the many years of manufacture by the Hicks company, and is believed to be as perfect as any of that type. Quick starting, reliability, and light weight are prime necessities in fish boat work of the smaller sizes, and the Hicks engine has always had a good record in these particulars.

a certain number of tons of whale meat a week.

Of course, Captain Lane figured that he would make a fair thing out of it, and the contract being duly made, he at once started preparations for the work. He found a small boat which he considered suitable for the work and purchased her at a small figure. He then rebuilt and refitted her along lines of his own design for the business of capturing whales. She is the smallest vessel in existence equipped to hunt whales by herself and to accommodate on board the crew who engage in the work. Her length is but 40 feet, beam 9 feet, and depth about 4 feet. She is to be fitted with a 15-horsepower Hicks gas engine temporarily, a larger one of 24 horsepower with three cylinders to be installed as soon as completed and shipped North from San Francisco. Foundations in the vessel have been installed of sufficient strength so that the change to the larger unit can be done with little or no trouble. She can be beached at the Alaskan port, where the tide rises and falls many feet, to change the propeller, and Captain Lane says the whole job can be done in a few days.

A newly designed whale bomb lance gun will be mounted on the craft. This weapon will be made by Captain Lane and his partners, and at a considerably less cost than the imported Norwegian ones. It is also believed it will be better.

The little craft is arranged so that the crew of three men will eat and sleep on board, and when a whale is caught they will tow it to the fox farms and go out for more. The vessel will make the trip to Alaskan waters by her own power, which is a considerable voyage for a small craft.

Novel Use for Workboat

In many different businesses workboats are prime factors. Perhaps one of the most curious is that of collecting food for blue foxes. Now this is no joke, but a statement of hard business fact. Away up in the Aleutian Archipelago there are hundreds of islands, somewhere in the neighborhood of four hundred. On many of these islands are established fox farms, where the best and rarest varieties of fox are raised for their fur. Much money has been made in this trade, and the growth has been great. However, as the number of packs are increasing the problem of food supply has become serious.

Now comes Captain Louis L. Lane, who for thirty-three years has been a resident of Alaska and who knows that country thoroughly, and who believes he has found the solution to the food problem. Captain Lane, knowing that there are many whales in the sea near these islands, discovered that foxes thrive and grow especially fine fur on whale meat. He took the matter up with the fox farm owners and agreed to furnish



Captain Lewis L. Lane, working on his new whale-hunting launch.



The new Southern Pacific freight steamer, El Oceano.

NEW SOUTHERN PACIFIC FREIGHTER

THE latest addition to the Southern Pacific Steamship Lines is the cargo steamer El Oceano, recently completed by the Federal Shipbuilding & Drydock Company, Kearny, New Jersey, to the designs of A. S. Hebble, superintending engineer of the Southern Pacific Steamship Lines.

The general characteristics of the El Oceano are as follows:

Length over-all	433 ft. 0 in.
Length between perpendiculars.....	415 ft. 0 in.
Beam molded	56 ft. 0 in.
Loaded draft	56 ft. 0 in.
Loaded displacement	11,740 tons
Deadweight capacity on 26-ft.draft	7,700 tons
Gross tonnage ..	6,767
Net tonnage	4,171
Cargo capacity in bales, cubic ft...	451,351
Cargo capacity in grain cubic ft...	505,585

The El Oceano is a steel, flush deck hull, with three complete plated decks and a partial orlop deck in No. 1 hold. Framed on the Isherwood longitudinal system, the floors and transverse frames are spaced a little closer than usual and are reduced in depth from

the ordinary rule for a vessel of this size. The transverse frames have special heavy stiffening on their inner edges. In this way, for this particular ship, a greater cubic capacity is obtained than would be the case were she built after the usual Isherwood rule.

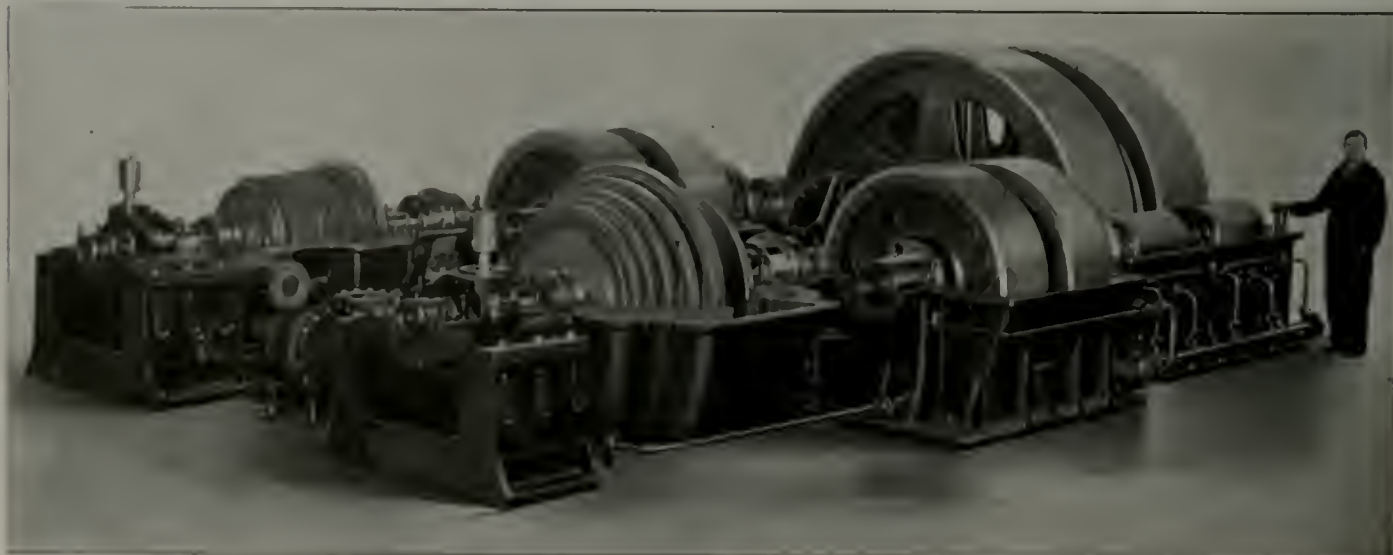
There are six water or oil tight transverse bulkheads, five extending to the main deck and one forward to the hurricane deck. In way of the engine room, and for 35 feet aft thereof, inner bottom plating is fitted to form fuel oil tanks. Elsewhere the ship has single bottom.

For facility in handling cargo there are five large cargo hatches and 16 cargo side ports.

Propelling Machinery

The experience of the Southern Pacific Lines with De Laval, cross compound, double reduction turbines was so satisfactory on the Bienville that a repeat order was registered in the case of the El Oceano.

The turbine for this vessel is designed to develop 6000 horsepower on 250 pounds steam pressure and 100 degrees superheat. The high pressure element of the turbine having comparatively small rotors, to reduce friction losses, exhausts into the low pressure



De Laval cross compound turbine and double reduction gear as installed on the El Oceano. Gear and turbine shown with covers removed.

element, the large rotors of which give ample room for expansion. The shaft of each rotor is connected through a flexible coupling to the high speed pinion of the De Laval double helical reduction gear. The intermediate gears, with which these two pinions mesh, are each connected in the same manner to an intermediate pinion meshing with a single large gear mounted on the line shaft to the single propeller. At full capacity the turbines revolve 3250 revolutions a minute. The propeller is 4 bladed with cast iron hub and bronze blades 18 feet in diameter, 22 feet 6 inches pitch, and with 117 square feet developed area. On a mean loaded draft of 25 feet, this machinery drives the vessel at 14¾ knots per hour.

Steam for these turbines is supplied by four Babcock & Wilcox water-tube boilers fitted with the Babcock & Wilcox oil burning system and having a total evaporating surface of 16,592 square feet. Forced draft is provided by two 60-inch, engine driven fans installed by John Reid & Co.

Deck Machinery

There are ten single drum cargo winches, two large warping capstans, and one windlass, all of Hyde make and all driven by double cylinder steam engines.

The steering engine is of the right and left hand screw type, steam driven, and mechanically controlled, also of Hyde manufacture. Welin mechanical davits are used with four 24-foot steel lifeboats. The usual fire hose and steam smothering pipes are installed in the cargo holds, and a complete Foamite installation is fitted in the boiler room space.

Engine Room Auxiliaries

The Davis Engineering Company supplied the feed water heater, distiller, and evaporator. Four fuel oil heaters were supplied by the Todd Fuel Engineering Company. The Federal Shipbuilding & Drydock Company installed their own make of condenser, auxiliary condenser, and main circulating pump. C. H. Wheeler & Co. contributed the auxiliary circulating pump, the auxiliary condensate pump, the auxiliary condenser "radojet," and one vacuum augments. The feed pumps, fire, bilge, lubricating oil, sanitary, fuel oil, service, and transfer pumps and oil cooler circulating

pump are all of the Warren Simplex and Duplex types.

Current for electric light is furnished by two steam engine-driven generating sets of 15 kilowatts capacity each, with Sturtevant engines and General Electric generators.

A Brunswick steam driven 2-ton refrigerating machine is installed on the hurricane deck and takes care of the total refrigerative capacity of 1100 cubic feet.

It is confidently expected that the El Oceano will show a very high record for efficiency and fuel economy in service. Her speed and reserve power place her in the first liner class, and at the same time her design is such as to give greatest practicable cargo capacity for the dimensions of her hull.

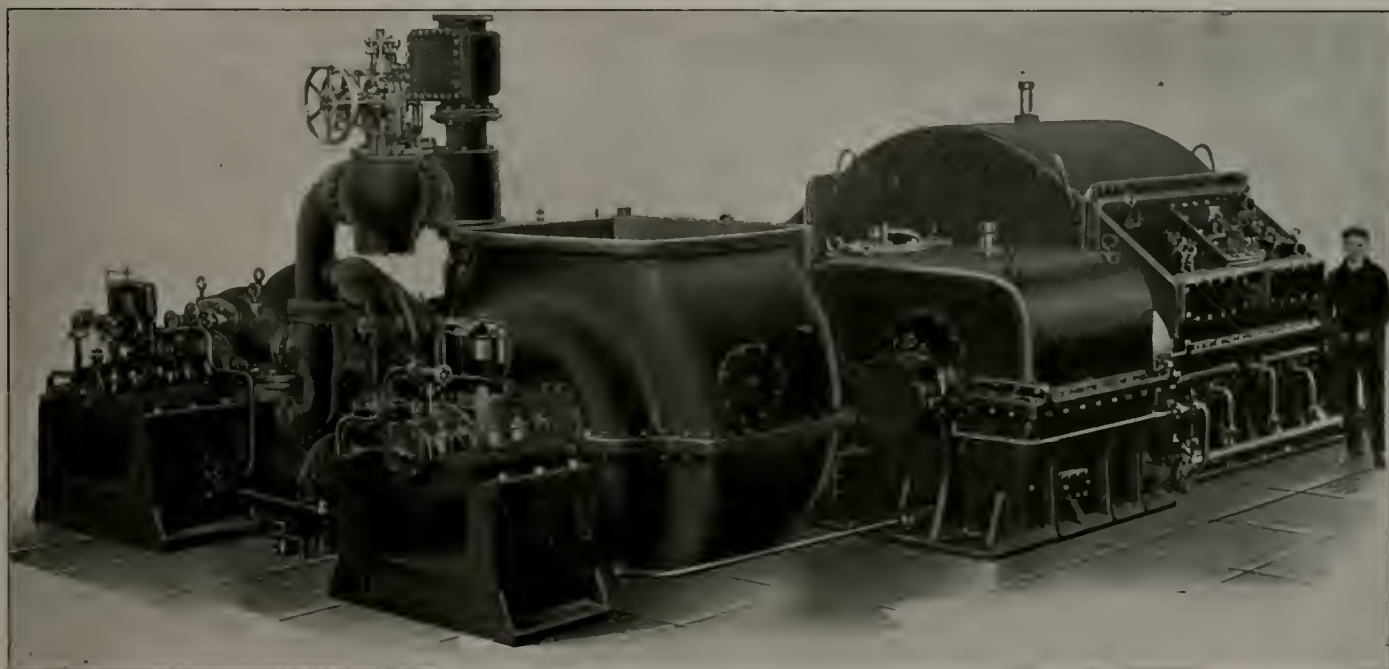
Together with the steamer Bienville, now being converted to a freighter, the El Oceano will give a cargo carrying service unsurpassed on the Atlantic Coast. The equipment of her engine room, with De Laval turbines and De Laval reduction gears amounts to a practical guarantee that this fine fast service will be maintained with unfailing regularity and dependability.

De Laval double reduction gearing for marine plants has an unsurpassed record for maintaining hard service at sea in a large number of installations covering practically every type and use of the modern steamship.

OUR YOUNGEST CHIEF

RALPH BRADY, son of William J. Brady, president of the Eureka Boiler Works, San Francisco, went out on the freighter Stanley Dollar on May 28, sailing from San Francisco for the Pacific Northwest, thence to return south in the Dollar Steamship Line's intercoastal run.

Ralph Brady is one of the youngest and most efficient chief engineers in the Pacific trades. Three years ago he was chief engineer on the Wolverine State (now President Hayes) in the India service under the Pacific Mail flag. More recently he served as chief on the steamer Ruth Alexander in the Admiral Line's coastwise service.



The De Laval cross compound turbine and double reduction gear for the El Oceano; 6000 horsepower on 250 pounds steam pressure.

A NEW ROAD TO OPERATING ECONOMY

THERE have been many applications in the past of bow rudders on bay ferries, canal boats, and river craft, but it has remained for Samuel Sutton, chief engineer of the Monticello Steamship Company of San Francisco, to work out an unique application of the bow rudder for the steamboat *Calistoga* of that company, operating between San Francisco and Vallejo.

The *Calistoga*, ex-Florida, was purchased by the Monticello Steamship Company at Baltimore early in 1924. She was brought out through the canal and after thorough reconditioning, practically amounting to rebuilding the ship, was put on the fast run between San Francisco and Vallejo on October 11 last. Some difficulty was experienced at that time in maintaining her regular schedule on account of slow turn around at both terminals, due to tidal currents and difficulty in maneuvering the vessel.

After studying this problem, Mr. Sutton decided that a bow rudder would cure it. In consultation with Ernest P. McRitchie of the technical staff of the Union Plant of the Bethlehem Shipbuilding Corporation, Ltd., designs for a bow rudder and for its attachment to the ship and for its control were developed. These designs called for two steel castings; one to form a rudder post, supporting the rudder spindle; the other to form a carrier for that portion of the bow plating and framing of the ship which was to form the body of the rudder itself. The designs having been made on paper, full size templates were taken from the ship while she was in operation, so that the patterns for the steel castings could be made with assurance that the finished casting would accurately fit the plate work. When the castings were ready, the ship was put in drydock and



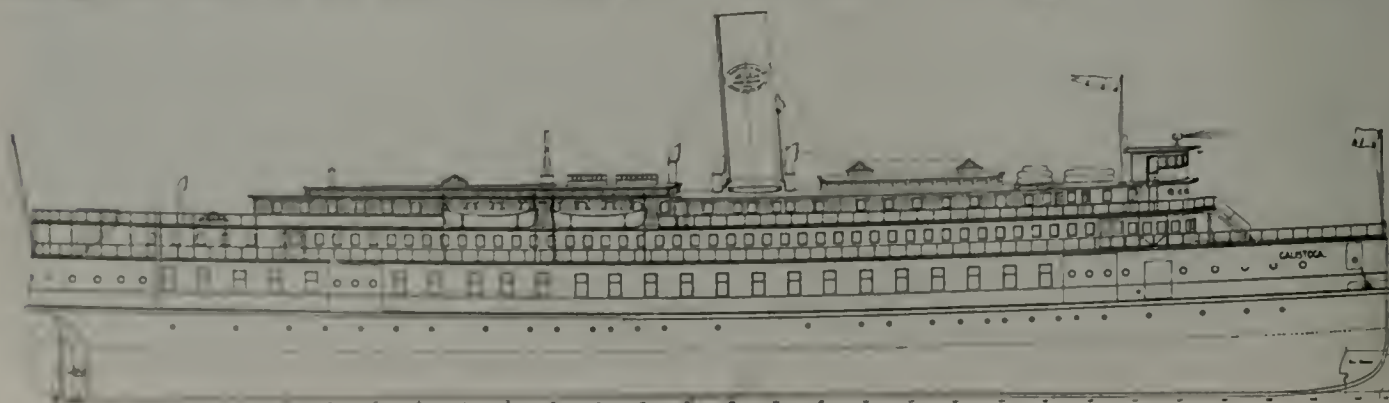
Steamer *Calistoga* in the drydock at Bethlehem's Union Plant, showing the bow rudder hard a port.

that section of the bow which was to form the rudder was cut out and fitted to the carrier casting, and the rudder post casting was fitted to the frames of the ship. As will be seen from reference to the illustrations herewith, a very fine job was made of this fitting; so that when the rudder is locked in the central position, the lines of the ship are fair and smooth, presenting no appreciable additional resistance to propulsion.

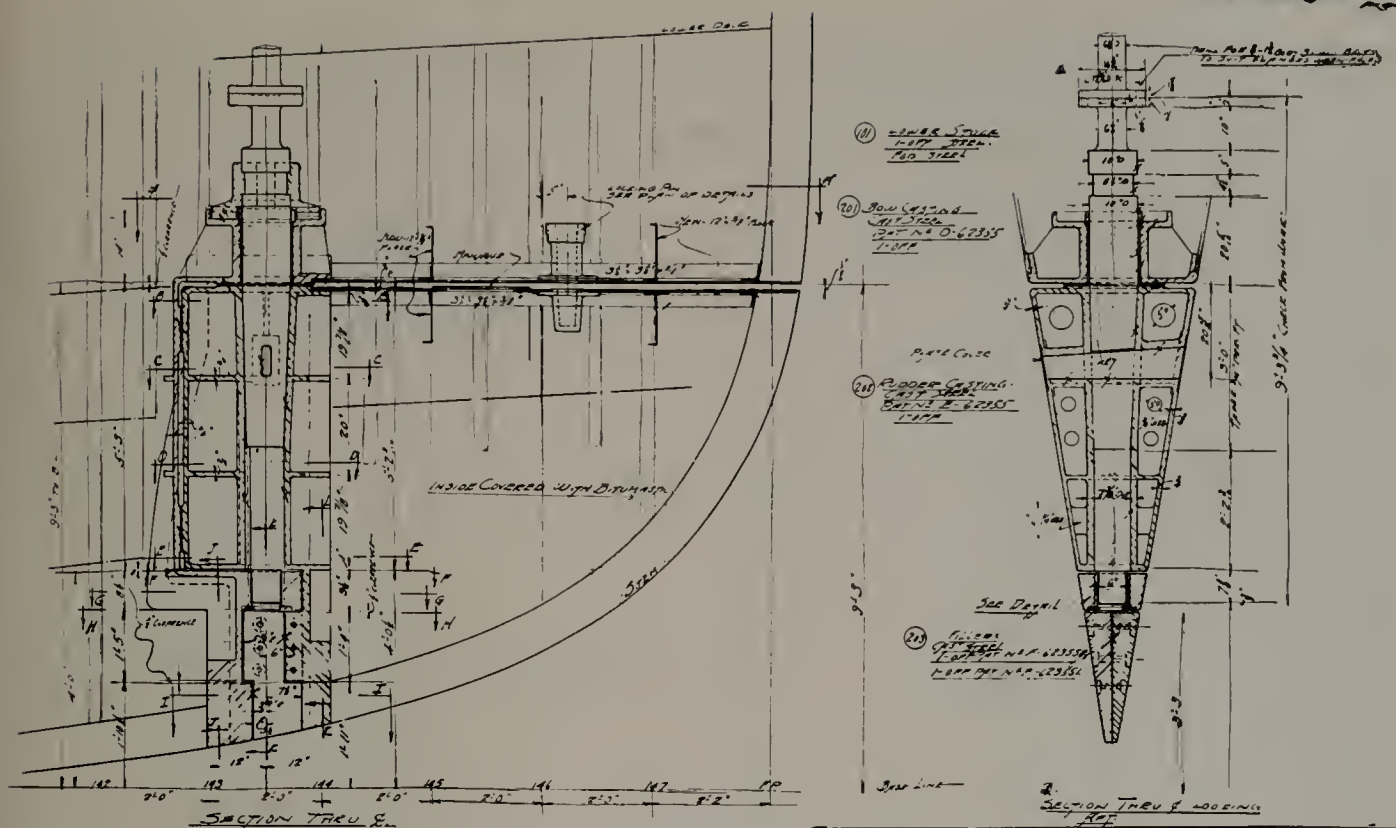
Several problems had to be met in this design, among which were access to the bearing in the gudgeon. This was accomplished by fitting two pieces, bolted together, below this bearing, so that when the cement over the bolt heads is chipped out and the bolts removed, these two pieces fall away, giving free access to the bottom of the bearing. This bearing is formed by placing a composition sleeve over the lower end of the

rudder stock, this sleeve revolving in a lignum vitae bushing in the gudgeon, the bushing being held in place below by a steel plate secured with brass screws.

The weight of the rudder is taken on a thrust bearing through a split collar clamped onto the rudder stock. This bearing is composed of three rings, the central ring of composition metal and the upper and lower rings of steel. These rings are of the floating type with diagonal oil grooves and perform very nicely as a thrust bearing. In order to take any undue strain off the gudgeon and pintle, finished bearing surfaces are provided on the two steel castings at the upper end of the rudder carrier and on its after surface. These finished surfaces have clearances of about 1/16 of an inch, and it is anticipated that they may sometimes jam through seaweed or wood chips entering. A short swing of the rudder in the opposite direction, however, will easily clear any ordinary interference; and so far there has been no failure to function.



Outboard profile of the *Calistoga* showing the position and relative size of the bow rudder.



Longitudinal and transverse sections through the center line of rudder stock, showing the construction of the bow rudder and the method of connection.

The rudder is operated by a simple Hyde steam steering engine with a manually controlled valve, a chain from the drum of the steering engine connecting through a sheave on the rudder stock. The quartermaster, operating the rudder, is in direct communication through a speaking tube to the bridge and receives steering signals by electric light; a red, a white, and a green light being immediately in front of him as he stands by at the valve. A hand wheel at the quartermaster's right controls the locking pin of the rudder, and an arrangement is now being worked out for a rudder position indicator which will show to the man at the valve of the steering engine exactly where his rudder is located at all times.

The bow of the Calistoga in way of this rudder was originally built with double frames and double plating to buck ice in Chesapeake Bay. This fact permits the development of a rudder of this type with possibly less structural difficulty than would be the case in a vessel of ordinary construction.

The most interesting result from this experiment is the saving of time in turn around, cutting down the maneuvering time at terminals to about five minutes,

in comparison with the twenty-five to thirty minutes which were often necessary before this change was made. This saving in time allows the Calistoga to make the same schedule with a reduction in fuel consumption of nearly 15 per cent; so that the cost of alteration is fully justified.

When she was rebuilt a year ago by the Monticello Steamship Co., the Calistoga became the finest steamboat on San Francisco Bay. Her upper deck was raised 30 inches and supported on steel beams. All pillars were removed and five new pillars were installed on the center line. This arrangement gives ample room for automobiles, trucks and freight.

The upper deckhouse is entirely enclosed in large glass windows and is very comfortably furnished. It makes a delightful enclosed promenade.

The dining room and galley are located on the lower deck aft of the engine room. The galley has been very carefully designed to maintain cleanliness and facilitate inspection. A single slab of sanistone makes the floor of the galley, and every piece of permanent galley equipment is supported by steel straps from above.



A broadside view of the forefoot of the Calistoga showing how rudder in the central position.

RAPID CORROSION IN CONDENSER TUBES

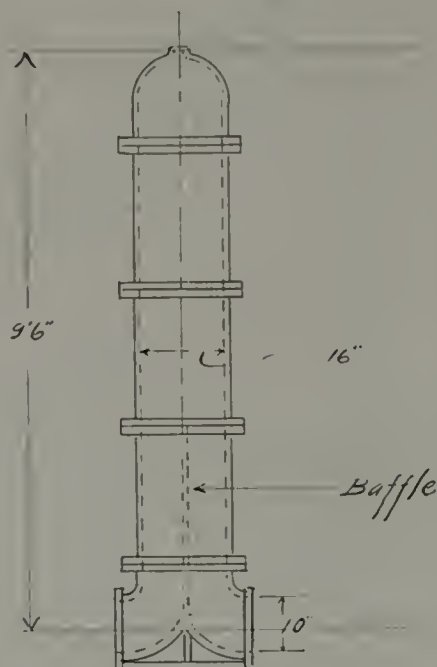
Some Notes on Research and an Interesting Preventive on a San Francisco Bay Ferry

ONE of the most serious problems in the maintenance of steam plants at sea is rapid corrosion of condenser tubes due to entrained air in the circulating water. An article published in "The Engineer" for July 6, 1923, written by Guy D. Bengough and R. May, gives the conclusions as to the causes of rapid corrosion in condenser tubes arrived at in the course of a long investigation under the direction of the Corrosion Research Committee of the British Institute of Metals. The article deals only with corrosion caused by air entrained with the circulating water in marine conditions. Corrosion from this cause is largely independent of chemical composition of tubes. Any selected area of any ordinary tube under certain conditions shows the action. Alloys containing up to 20 per cent nickel have failed as badly as ordinary brass.

Certain characteristics always accompany the action which produce rapid failure. First, such failure usually occurs near the water inlet of the tubes in the first pass. Second, it occurs indifferently anywhere around the circumference and frequently all around it. Third, a corroded longitudinal section of the tube when rubbed down shows a characteristic water worn appearance which indicates very clearly the direction of flow of water. Fourth, it is usually confined to tubes spaced over a comparatively small area of the tube plate. A new tube replacing a corroded tube usually fails just as rapidly. Fifth, rapid corrosive action is almost never shown by tubes that have been a long time in the condenser. Sixth, ordinary methods of electrolytic protection fail to prevent this action. Seventh, metallic copper is seldom found as a corrosion product about these corroded areas. Eighth, ferrules occasionally show this action, and even in the case of 60:40 alloys usually no metallic copper is visible at corroded surface.

The tests all show that entrained air in water is the real cause of rapid corrosion. Sea water, running through a condenser, always contains a small amount of air in very fine bubbles, caused by churning in the centrifugal pump, which causes them to pass out of solution. These bubbles retain their identity for considerable periods of time. Comparative tests show the corrosive effect of sea water containing dissolved air and the same water containing mechanically entrained air. The results are very striking and a few of them are shown in the table herewith.

With brass condenser tubes, the rate of corrosion is greatly increased when a small volume of entrained air is exceeded. With 3 litres of entrained air per hour passing through the tubes, the life of an ordi-



Sketch showing design and construction of column for removal of entrained air from condenser circulating water as installed on a San Francisco Bay ferry.

nary brass tube would be about three months. The entrained air is more harmful in a fine foam than when present in large bubbles, and the air bubbles in a fine foam are much more difficult to separate from the water.

Generalizing roughly, the authors conclude that water containing 3 litres of air per hour will cause corrosive penetration of from 26 to 33 per cent per month in the ordinary 70 : 30 condenser tubes of commerce. With a highly foaming batch of water, this penetration has been observed to reach as high as 49 per cent. A small amount of sulphuretted hydrogen, such as is occasionally found in ordinary sea water, greatly increases the rate of corrosion. Sea water with an amount of this gas equal to 3 c.c. per litre gave penetrations of 82 to 90 per cent per month of 28 days.

It will be very plain from these experiments that any method by which the entrained air can be removed from circulating water will greatly help in lessening the rapid failure of the condenser tubes due to corrosion.

It is apparent from these experiments and from the photographic records of the flow of air and water mixtures in glass tubes, as shown in the accompanying illustration, that great care is necessary in the manufacture of condenser tubing to make a properly homogeneous tube and one that is of true form. The slightest interruption to the flow of liquids in tubes apparently sets up great disturbances in direction and character of flow and causes what are equivalent to bombardments by bubbles of entrained air of the inner surfaces, producing heavy corrosion on the area bombarded.

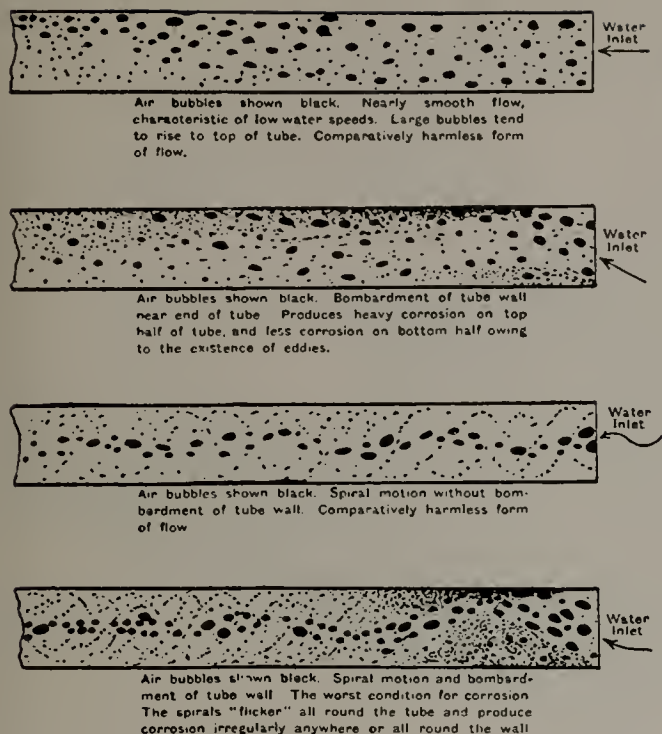
TABLE 1 CORROSION OF BRASS TUBES (18 W.G.)
(Duration of experiment, 28 days; temperature, 20 deg. cent.; speed of water, 10 ft. per sec.)

Alloy	Per cent penetration on 1 21 mm. = 18 W.G.	Amount of entrained air in cc. per hr.
70:30	Less than 1	0.7
70:29 ¹	2.5	0.7
70:30	Less than 1	25
70:30	Less than 1	145
70:30	31	3,000
70:29 ¹	35	3,000
70:30	83	11,000

¹ Laboratory-cast specimen.

A very interesting experiment is now being carried out on San Francisco Bay with this end in view. The apparatus used is shown in the accompanying sketch and was designed for installation between the circulating pump and the condenser of one of the turbo-electric, double-ended, propeller-driven ferry-boats operating between San Francisco and Oakland.

The apparatus consists of a cast iron column made in sections bolted together, the lower section forming



FIGS. 1 TO 4 BEHAVIOR OF WATER CONTAINING ENTANGLED AIR IN GLASS CONDENSER TUBES

a "Y" to take on one side the discharge from the circulating pump and on the other the circulating water inlet to the condenser. In this "Y" and in the adjacent section is a centrally located baffle plate. The mixture of air and entrained water from the centrifugal pump is discharged against this plate, and the air largely separates and rises to the top of the cylinder, where it is taken off as an air and water mixture through a 1-inch pipe and led overboard through the ship's side.

For purposes of observation this air and water mixture is passed through suitable connections to the bottom of a water-filled glass cylinder, where displacement due to the air separating may be measured, and the amount of air calculated. It is very interesting in watching this cylinder to note the difference of the amount and character of the entrained air due to conditions in the sea water alongside the vessel. Ordinarily under full headway and with comparatively calm water, the air is in the form of very small bubbles, which give the mixture the appearance of steam. On starting out of the slip and as the back water from the forward propeller reaches the sea water inlet, the air bubbles increase in size and number, gradually decreasing as the boat reaches headway in the stream. A difference in the rate of accumulation is noticed also on days when the bay is rough or on the frequent occasion of passing through the wake of another steamer.

SHIPOWNERS' CONFERENCE

(Continued from page 263)

any sale of the vessels made with the approval of the Secretary of Commerce, remaining after reimbursement of the owner of the vessel of the proportionate part of the building cost paid by him, and on the further condition that the net earnings of the vessel, remaining after deduction from gross earnings of operating expenses, insurance and reasonable interest and customary depreciation on the proportionate part of the building cost of the vessel paid by the owner, averaged over each period of five years after completion of the vessel, shall be paid into a trust fund and repaid to the government at the end of each of said periods of five years, until the whole amount loaned, with interest thereon at not over 3 per cent per annum, is repaid; provided, however, that the vessel shall not be permitted to engage in the coastwise trade of the United States until the entire amount loaned is repaid to the government.

MARITIME WORKMEN'S COMPENSATION ACT

(40) That a Federal Maritime Workmen's Compensation Act be enacted, which shall provide for the payment of reasonable compensation to maritime workers injured, and to the dependents of those killed, in the course of their employment, except for injuries wilfully self-inflicted.

DISCHARGE BOOKS

(41) That the use of discharge books by seamen, in which shall be recorded such data as may be necessary to show the holder's service, rating and standing as a seaman, be compulsorily required.

PROTECTION OF COASTWISE TRADE

(42) That the time honored policy of the United States of reserving its coastwise trade to American citizens and to American built vessels should be maintained.

INTERCOASTAL TRADE

(43) That the United States mail now carried in foreign flag ships to and from the Panama Canal Zone be carried in American ships engaged in the intercoastal trade, so far as practicable, and that such ships should be suitably compensated therefor.

NEW YORK BARGE CANAL

(44) That consideration be given to any investigation relating to the improvement of the New York Barge Canal, with a view to determining whether it can, at suitable cost, be developed as an aid to American foreign trade.

INTERNATIONAL RECOGNITION OF CLASSIFICATION SOCIETIES

(45) That the International Chamber of Commerce take action which shall have as its object reciprocal recognition by the maritime nations of the various classification societies which have the approval and sanction of their respective governments.

DEPARTMENT OF MARINE

(46) That due consideration be given to the organization of a Department of Marine, to be headed by a secretary known as Secretary of Marine, which department shall have transferred to and vested in it all of the various activities of the government in connection with shipping matters, other than those of a regulatory character.

LEGISLATION

(47) That the associations continue their investigations into the factors which operate against American ships in foreign trade, and that a special committee be appointed to prepare before the convening of the next Congress a draft of legislation which will carry the recommendations into effect.

COOPERATION WITH GOVERNMENT OFFICIALS AND WITH OTHER ORGANIZATIONS

The associations believe that a united effort should be made by the government and by all business organizations to bring about the enactment of such legislation as will make possible the successful operation of a privately owned American merchant marine. Accordingly, the associations recommend:

(48) That the associations join and cooperate with government officials and with other organizations in plans to foster and develop an American merchant marine.

AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

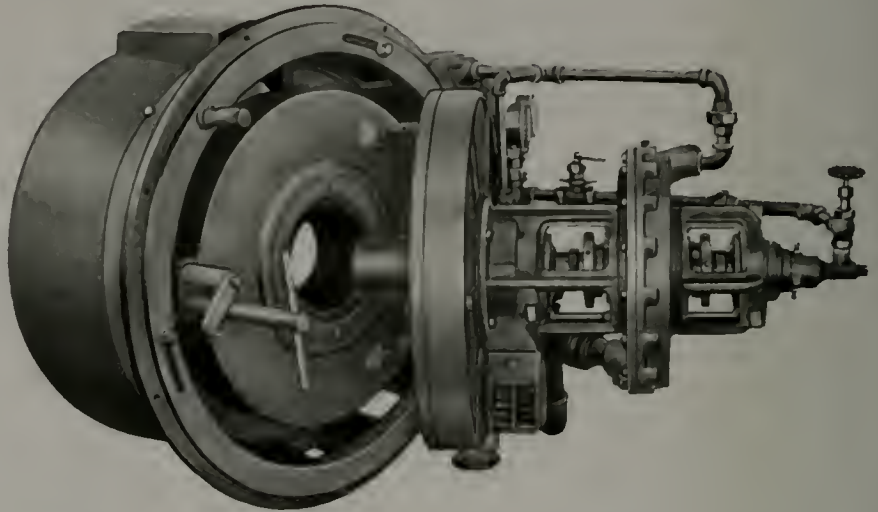
RAY ROTARY INVADES MARINE FIELD

SAN FRANCISCO has the credit of being one of the first, if not the first, city to develop the burning of fuel oil under furnaces. In the old days, says an old time marine engineer, "Everybody used to make their own oil burners." In those days oil was cheap and very little attention was paid to economy of fuel or perfect combustion.

In 1915 William R. Ray of San Francisco took out patents on the Ray burners and organized the W. S. Ray Manufacturing Company for the development of this burner for industrial heating purposes. During the last ten years many thousands of these burners have been manufactured and applied to hundreds of different uses.

As a consequence of this wide experience the engineering department of the W. S. Ray Manufacturing Company has accumulated a very large amount of information and of original data in the field of mechanical oil burning. Improvements and refinements in the design of the Ray burner have been added constantly and many of these improvements and mechanical features are exclusive to this burner.

As will be seen from the sectional illustration reproduced herewith, the Ray burner consists essentially of a revolving cup into which the fuel oil is fed, so that it spreads out in a thin film on the interior of the cup and is discharged into the air driven through a nozzle surrounding the cup by a fan mounted on the same shaft as the cup itself. One of the most important improvements made in the development of this burner was the introduction of angular vanes in the air nozzle set in such wise that the air driven against



Marine type of Ray rotary fuel oil burner with steam turbine driven fan and atomizer.

them by the fan is whirled in a direction opposite to that of the oil film leaving the cup atomizer. By this arrangement a very complete and intimate mixture of air and atomized oil is obtained, insuring perfect combustion throughout a wide range of capacity and load.

In the Ray burner, the quantity of air admitted to the burner itself and through the draft blowers underneath the burners is automatically regulated so as to be correctly proportioned at all loads to give perfect combustion for the quantity of oil being sprayed into the furnace. In all high pressure steam installations a special governor placed in the fuel oil supply line maintains constant steam pressure automatically.

In 1922, after many requests and inquiries, W. S. Ray Manufacturing Company developed a marine type burner, using a steam turbine for rotating the fan and the atomizer. In connection with this burner there was developed also a special type of furnace front. Reference to the illustration will show that this burner is a simple, compact unit easily accessible for adjustment to all of its parts and insuring for marine installations the same standard measure of economy and efficiency that has accompanied the installation of the standard motor driven Ray Burner in shoreside installations.

The advantages claimed for the Ray marine type steam turbine oil burners as practically exclusive features are

First, the single unit construction, including fan, turbine, and atomizer.

Second, the angular fan air nozzle, insuring perfect mixture and atomization.

Third, ability to burn any fuel oil that can be pumped.

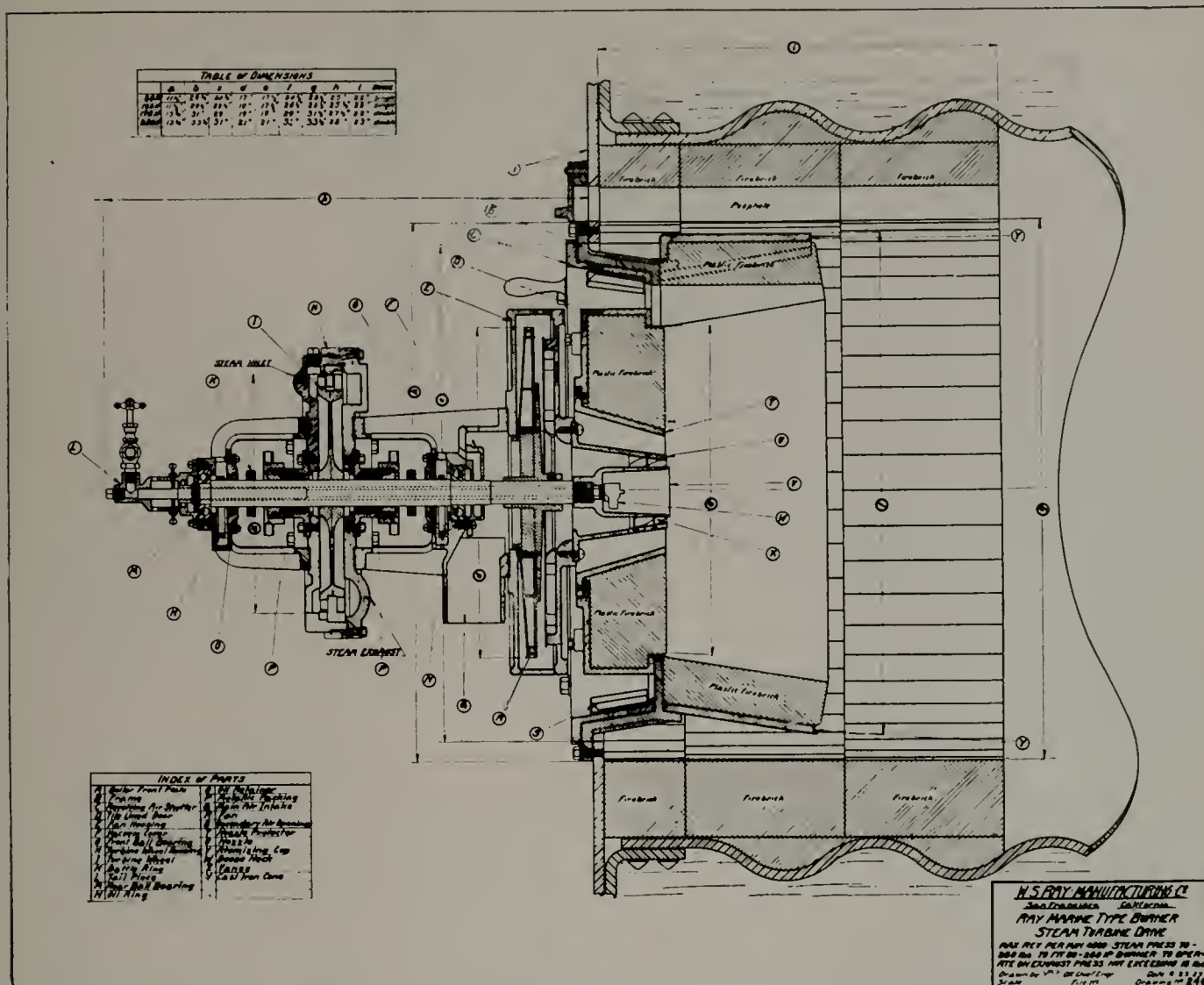
Fourth, creation of its own forced draft.

Fifth, perfect combustion on maximum oil pressure of 50 pounds.

Sixth, no blocking or carbonization of tips. The



Ray burners installed on the steamship Crescent City



Sectional elevation of marine type Ray rotary fuel oil burner as installed on the furnace front of Scotch marine boiler.

Ray burner will run around the world under a marine boiler with its tip in perfect condition.

Seventh, ability to burn any grade of oil cold with perfect combustion.

The marine type steam turbine burners are built in stock in six sizes, with capacity from 20 to 250 horsepower.

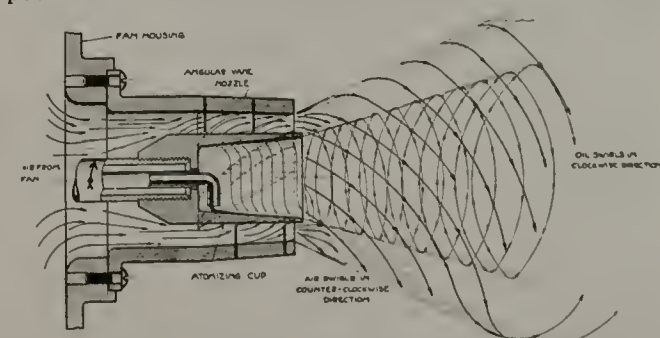
Since the development of the marine type of Ray burner a number of marine installations have been made with uniform success. Notable among these are those on the U. S. S. Navigator, U. S. S. Tillamook, U. S. S. Algoma, steamer Crescent City and steamer Glacier.

The burner had attracted the favorable attention of the United States Navy through the performance of installations made at Mare Island. A number of oil burner steam tugs there had difficulty in keeping up proper steam. This difficulty was entirely eliminated by the introduction of the Ray burner, and at the same time almost unbelievable economies in fuel oil were effected. At the present writing Mr. W. R. Ray is in Philadelphia to be present at an official test of the Ray burner made by the Engineering Department of the United States Navy.

The latest marine installations was the fitting up of the coal burning boilers on the steamship Glacier

with Ray burners. On this job 18 burners were used. The Glacier is the old transport Buford, bought from the United States Army by the Alaska Salmon Company to serve as a cannery steamer, transporting fishermen to Alaska and canned salmon from Alaska. A dock trial of this installation showed perfect combustion by the burners.

The Ray furnace fronts on the steamship Glacier are lined with Jointless fire brick furnished by the Pibrico Jointless Fire Brick Company. This company maintains an organization at San Francisco and other ports for the service of marine installations. Jointless



Diagrammatic sketch of atomizing cup and air nozzle of Ray rotary fuel oil burner indicating the complete atomization of oil film through the opposing whirl of air and oil.

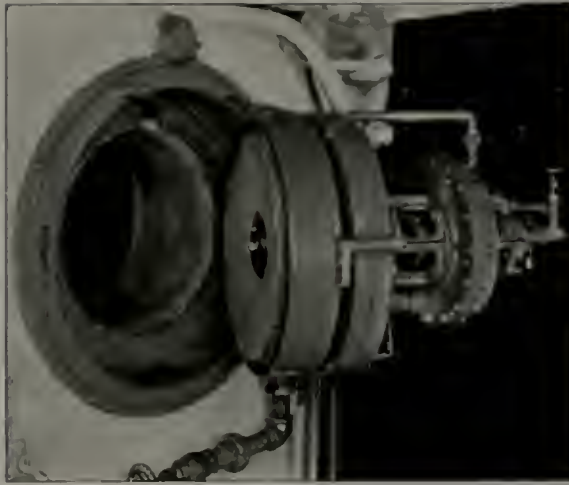
fire brick are molded in place to suit conditions and are easily applied, forming a perfect refractory surface.

One notable feature of the Ray burner is that the flame burns right from the edge of the atomizing tip instead of beginning five or six feet away from the same. This tends to higher boiler efficiency because it uses the heating surface for the entire length of the furnace in Scotch boilers or of the lower range of tubes in the water tube boilers. Notwithstanding the fact that the edge of the rotating atomizing cup is practically in contact with the flame, the cup itself remains at a comparatively low temperature. Engineers who have had charge of these burners claim that after burning for hours at full capacity, the nozzle itself is not uncomfortably warm to the hand.

The engineering personnel on the steamer *Glacier* are highly enthusiastic over the new burners, and it is expected that on the Alaska trip a new record will be set for fuel economy and boiler efficiency.

One very decided advantage of the Ray method of burning fuel oil under boilers is the uniform distribution of heat and the flame, which tends to great savings in furnace wall insulation and refractories. This particular feature has attracted the attention of a number of large steamship companies, and negotiations are now under way to change over some of the most important marine oil burning installations to the Ray type burner.

W. S. Ray Manufacturing Company has added largely to the industrial life of San Francisco. There is an investment in the manufacturing plant of over five hundred thousand dollars, with a peak capacity in burners and ranges of five million dollars worth of apparatus per annum. The output in burners in 1924 ran over one million dollars, and the output in ranges an additional quarter million. The plant is one of the



View of a Ray rotary fuel oil burner featuring the refractory rings of Plibrico firebrick.

best equipped manufacturing establishments for turning out this type of apparatus on a production basis, and if the present indications are any criterion, it will soon have to be enlarged and expanded to take care of the Ray burner business.

Ray burners and ranges are distributed by brokers and agents in practically every city in the United States and in all the important ports of North America. As has formerly been recorded in *Pacific Marine Review*, Ray burners for ship's galleys have, on a number of occasions, replaced coal furnaces and both foreign and domestic oil burners with great resultant savings. A notable instance was that of the American-owned German-built palatial yacht *Vanadis*. The German system of oil burning in her galley failed completely when she was being brought across the Atlantic for final delivery, and was replaced at Jacksonville, Florida, by Ray burners expressed from San Francisco.

GROUP INSURANCE FOR STEAMBOAT MEN

THE Norfolk & Washington Steamboat Company, Washington, D. C., has provided group life insurance for the members of its office and operating force. Protection for individuals ranges from \$500 to \$1000 on a length of service basis. About 68 are covered for approximately \$45,000.

Underwritten by the Metropolitan Life Insurance Company, the group insurance program includes, as supplementary features, certain service advantages. Among these are a free visiting nurse service, and a department for the distribution of booklets on health subjects and sanitation.



Two views in the machine shop of the W. S. Ray Manufacturing Company, where Ray rotary fuel oil burners are built.

SCOVILL CORPORATION EXPANDS PACIFIC COAST FACILITIES

ANOTHER widely known organization is expending its facilities to better serve the rapidly growing Pacific Coast territory.

The Scovill Manufacturing Corporation, and the American Pin Company division of the Scovill Manufacturing Corporation, announce the opening of new warehouses and offices at 651 Folsom street, San Francisco and 2261 East Fifteenth street, Los Angeles.

From the San Francisco office will come direction of sales and service in the entire Western States territory, while the Los Angeles branch will handle the companies' affairs in the Southwestern field.

George D. Engle is district sales manager of the Western States territory of The Scovill Manufacturing Corporation and was formerly manager of the Los Angeles branch of the late National Brass & Copper Tube Company, Inc., of California.

K. M. Reid is district sales manager of the American Pin Company division of The Scovill Manufacturing Corporation and was formerly a partner in the Engle-Reid Company, with headquarters in San Francisco when they were Pacific Coast representatives of The Scovill Manufacturing Company.

Ellsworth D. Goldsmith is supervising sales in the Southwest field with offices at the Los Angeles branch. Mr. Goldsmith was recently transferred from the home office at



The San Francisco headquarters of The Scovill Manufacturing Corporation.

Waterbury, Connecticut, to assume his present duties. In the Pacific Northwest, representation is maintained by George H. Killits at Portland, with offices in the Dekum building, and Robert B. Yettick at Seattle, with offices in the Maynard building.

The Scovill Manufacturing Company, which is the parent organization, is the oldest brass company in

America, having been established in 1802. The organization specializes in brass mill products which involve particularly exacting physical qualities, such as its special spring bronze, its platers' bars for the jewelry trade, reflector brass, high speed free turning rod, and an improved Muntz condenser tubing, and its Cup-Drawn Admiralty condenser tubes.

In a broad classification of the company's products one finds, besides the broad range of mill products in brass, bronze, and nickel silver, in the form of sheets, rods, wire and tubes, such groups of manufactures as follows; (the first three groups are regularly made and carried in stock, the balance are made on order for other companies to market under their own trade name).

Screws, machine and cap screws, rivets, the screw production running in excess of three millions a day.

Buttons, uniform and dress buttons, patent and screw-on buttons of every description, and fasteners of all kinds.

Other stock articles, butts and hinges, wire buckles, collapsible drinking cups, ferrules, and thimbles. Sewing thimbles may be turned out at the rate of four thousand an hour.

Burners, Queen Anne, incandes-



The Los Angeles headquarters of The Scovill Manufacturing Corporation.

cent gas; also parts for electric wiring devices, of which alone about eight thousand pieces are turned out per hour.

Electrical motors, the various types of household appliances that are electrically operated. In vacuum cleaners, for example, the production capacity is about forty per hour. Spring motors and collateral attachments. A finished phonograph motor can issue from the productive battery every forty-five seconds.

Valves, among valves of various forms and uses, the radiator valve production reaches about three thousand per day.

Novelties, the toilet articles and containers of the widest variety.

Blanks, all kinds of clock and watch parts, as well as bicycle and automotive accessories, also eyelets, caps, shells, coins, medals, and formed wire specialties. The eyelet room issues about four million pieces per day.

Screw machine products, small parts made from brass, bronze, nickel silver, steel, aluminum and other metals.

Munitions, shells, bullet jackets,

fuses and explosive accessories.

Castings, brass and aluminum forms, both forged and cast, plumbing and bedstead trimmings.

In all these divisions, the continually changing variety of product and its wide distribution in world markets justify the company in feeling that, on its products, as on the British flag, the sun never sets.

It is estimated that, during the last 60 years, an average of about one hundred different articles, not including the separate elements of complete assemblies, have been added annually to the extensive output of the company's manufacturing department. As an index of the scope and extent of this department of the plant, one may note the growth of the subsidiary division which is exclusively engaged in preparing the machines and tools for use in the various productive processes. In 1910 there were employed over 300 machinists, die and tool makers, for this work. In 1915, they numbered over 500; and they reached in 1920 the maximum of 850.

A further index of the company's development may be found in the

number of employes. From 13 in 1802, these had increased to 190 by the date of the company's incorporation and remained at about this figure for the decade of the fifties. By 1870, they had risen to 538, only to be set back by the depression of the seventies, to 339 in 1880. In 1890 they had increased to 1200; by 1900 this had become 2000, and by 1910 even that had been doubled. During the war emergency the total rose to nearly 15,000, but of this not more than 10,000 may be regarded as normal capacity.

Immigration has reflected itself in the number and variety of languages spoken among the employes. There are, however, many representatives of the old-time Yankee personnel, and the company has been distinguished by the number of employes who have been in its service over a long period; many for a generation and not a few for over a half-century.

The American Pin Company division specializes in the manufacture of the nationally known "Ampinco" plumbing and electrical brass goods.

LUNKENHEIMER APPLIANCES IN MARINE SERVICE

THE operating conditions prevailing in the various engineering fields demand specific constructions of appliances in order to safely, efficiently, and economically perform the service required.

It is therefore necessary that the manufacturer of engineering appliances make an exhaustive study of the field for use in which a device is contemplated to be manufactured, all conditions under which the device must operate, and carefully study the current rules and regulations as prescribed by state and national bodies, in order that the construction may apply; all of which should be done before attempting to design the article. Particularly is this true of the marine engineering field, which is so stringently governed by national laws.

In the manufacture of valves and other engineering appliances, the Lunkenheimer Company have always strictly adhered to this policy of "knowledge before performance," and to this adherence they largely attribute their sixty-four years of constant successful progress.

Lunkenheimer products for the marine field fully comply with the

rules and regulations of the Steamboat Inspection Service, Department of Commerce. Valves are stamped "M. S.", indicating that they are of proper design and have been tested in accordance with the Service requirements—an hydraulic test pressure of three and one-half times that of the working steam pressure.

The extensive line of engineering appliances manufactured by the Lunkenheimer Company and carried in stock by distributors in all commercial centers, consists of bronze, iron body bronze mounted, and steel, globe, angle, check, non-return, blow-off, pop safety, and relief valves; water columns, gauges and gauge cocks; low water alarms, and fusible plugs; whistles, cocks, bronze pipe fittings, unions, lubricators, oil pumps, oiling devices, oil and grease cups, made in a large variety of designs and in all standard sizes.

Maximum service and satisfaction are assured by the Lunkenheimer method of manufacture. It is so exacting that the broadest guarantee to the effect that Lunkenheimer products will really perform in actual service what is claimed for them can be positively relied upon.

Two basic rules of the Lunkenheimer Company, which are strictly adhered to by every precautionary measure are:

1. Not to adopt an article as a Lunkenheimer product until long tests under the most severe conditions have proved that the maximum degree of efficiency, safety, durability, and economy of maintenance have been attained.

2. This high degree of perfection once established must be maintained by uniform production, which is made positive by rigid tests and careful inspection—not only when the products are assembled, but after each step in the process of construction.

To facilitate the selection of valves and engineering appliances for specific service, the Lunkenheimer Company has prepared an attractive brochure which portrays at a glance the various designs, their application, the sizes, and the pressure and temperature ratings for which they are warranted. A copy of this interesting book may be obtained, free of charge, from the Lunkenheimer Company of Cincinnati, Ohio, or from any of their agents or distributors.

HIGH TEMPERATURE INSULATION

By EDW. A. PHOENIX

UNTIL a comparatively few years ago, radiation loss from heated equipment was considered an uncontrollable source of waste. Operators knew radiation losses existed, but they were considered as a matter of course and few positive attempts were made to determine what they were actually costing in dollars and cents. The first intelligent attempt at reducing heat losses in modern industry was the use of insulation for covering steam pipes. Even this development is comparatively recent, although at the present time practically all steam pipes are covered with insulating material of some kind. During the last ten or fifteen years, however, there has been a broader and much more important application of heat insulation in equipment operating at temperatures far above that of steam and for which materials originally developed for insulating at steam temperatures are not suited. Included in this classification are boilers, furnaces of various types, kilns, oil stills, gas and glass equipment, which are operated at temperatures of from 1800° to 3000° F.

Factors Affecting the Quantity of Heat Lost

In the loss of heat from a boiler wall there are involved, first, the transmission of heat through the wall to the outer surface and, second, the giving out of that heat from the outer surface to the air, which carries it away. The quantity of heat transmitted by conduction through a wall varies directly with the area of the wall, the temperature difference between the hot and cold surfaces of the wall, the thermal conductivity of the material of which the wall is composed, and, inversely, with the thickness of the wall.

Radiation losses rise rapidly with rise in temperature, and it is consequently increasingly important to reduce heat losses at the higher temperatures. The increase in radiation loss with increase in temperature is very clearly shown on a curve prepared by C. R. Darling* giving heat losses from metal surfaces at various temperatures (Figure 1). It will be noted that the steel casing of a furnace at 360° F. (atmospheric temperature 70° F.) will radiate 1000 b. t. u. per square foot per hour, whereas if the tempera-

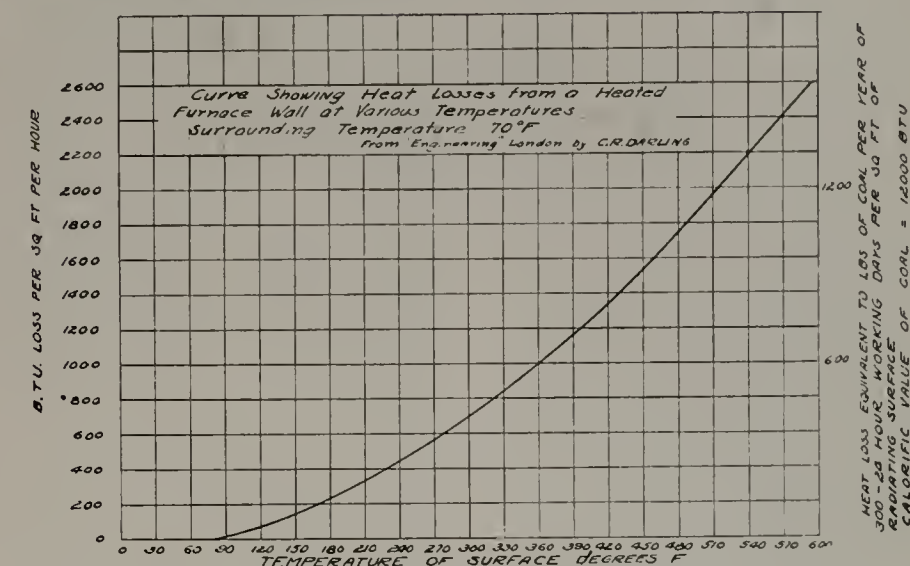


Fig. 1

ture is reduced to 180° F., the loss is only 240 b. t. u. per square foot per hour. It is therefore important to reduce the exterior temperature to the lowest possible minimum.

Use of Insulating Materials

A good refractory material is essentially strong and dense and is consequently highly conductive. In order to prevent excessive heat loss, a wall must either be built up of great thickness, which is costly, gives an inelastic wall, and absorbs a large amount of heat not used in productive work, or be built to include as a component of the wall a layer of some material of lower thermal conductivity, called the insulator.

The rate of heat flow through a wall depends upon the resistance of the component materials to the heat waves. Generally speaking, a ma-

terial having a low apparent density is considered to be a good insulator. Most such materials contain a number of small voids, or cells, containing air. There is danger, however, of having the voids too large and having radiation across the spaces and convection currents within the voids, which increase the apparent conductivity. Roughly speaking, if the voids are large enough to be seen with the naked eye, they are large enough to be instruments of heat transfer by radiation and convection.

The relative thermal conductivities of representative refractory and insulating materials are shown in Figure 2. The lines showing the conductivities of red brick and the refractories illustrate the rapid rate of increase as the operating temperature increases. It will be noted that the insulating brick averages about twelve times as effective in retarding the passage of heat as the refractory. The low conductivity of this insulating material is due to the fact that it contains a volume of as much as 85 per cent of infinitesimal air cells which effectively break up the heat waves. The term infinitesimal is used advisedly as it is estimated that there are from forty to fifty million of these cells in each cubic inch of the natural rock. Being practically pure silica (SiO_2), the material has a high melting point, 2930° F., as determined by the Bureau of Standards. This permits its use as insulating material in practically all types of heated equipment. It is recommended strictly as an insulating material, how-

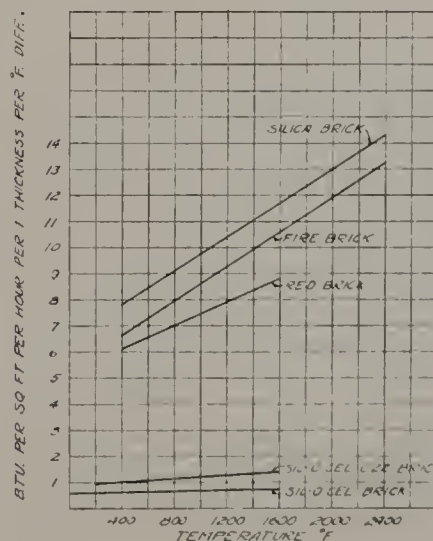


Fig. 2

*"Engineering," London, 1912.

ever, and in no case should the refractory linings be eliminated, principally due to the fact that insulating materials are not physically constituted to withstand a great deal of abrasion. On the other hand the crushing strength is unusually high, being over 400 pounds per square inch for the brick form.

Insulation of Marine Boilers

Under the severe conditions encountered in marine work, an insulating material must meet rather exacting requirements. The boilers are forced for long periods at high temperatures and only limited space is available for refractory linings, so that the temperature of the fire brick in contact with the insulating brick is necessarily high. The insulating material must therefore be able to withstand very high temperatures without deteriorating or losing its insulating efficiency, and it must not disintegrate under vibration.

The steel encased boilers used for marine service require an insulating brick that can be placed between the fire brick lining and the steel casing. After considerable experience in marine practice it has been found advisable to use a special calcined brick which will withstand high temperature without shrinkage. Sil-O-Cel C-22 brick were developed especially to meet this need. They are unaffected by temperatures up to 2000° F., a temperature rarely found behind refractory linings, and they possess very high insulating value. Either one or two 2½-inch thicknesses of Sil-O-Cel C-22 brick, to give 2½ inches or 5 inches of insulation, are laid between the fire brick and casing. If two courses of insulating brick are used, joints are broken between courses. The method of installing insulation against the casing is shown in Figure 3.

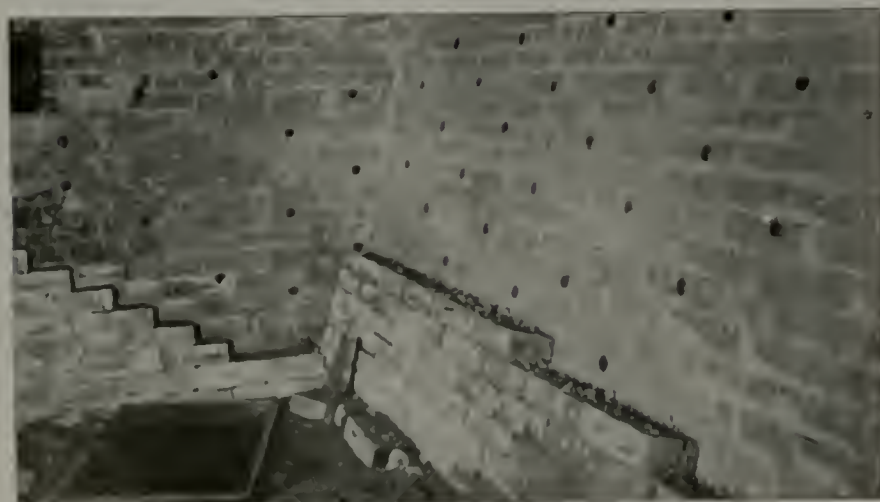


Figure 3. Illustrating the insulation of boiler casings with Sil-O-Cel brick.



Figure 4. Illustrating insulation of the floor plates of a marine water-tube boiler with Sil-O-Cel.

In the bases of oil-field boilers Sil-O-Cel C-3 is used. This material is a special granular form of calcined Sil-O-Cel, which is mixed with Portland cement in the proportion

of four parts of C-3 to one of cement by volume. It has a high crushing strength and will stand high temperatures without deterioration. This material is usually installed in a layer from 4 inches to 6 inches thick, on which two courses of fire brick are laid. In some cases the dry C-3 is used without the addition of cement to a thickness of approximately 3 inches. On this is laid a 2½-inch course of Sil-O-Cel C-22 brick and two layers of fire brick. Figure 4 shows the base of a marine boiler being insulated with Sil-O-Cel C-3 and Sil-O-Cel C-22 brick.

Fire Room Temperatures Decreased

In addition to the fuel savings which are accomplished by efficient insulation, the steel casing is protected against excessive temperatures which eliminates the danger of buckled plates and minimizes expansion and contraction in the frames of the boilers to such an extent as to have a marked influence on the up-keep of the tubes themselves.

Furthermore, fire room temperatures are greatly reduced, which improves working conditions materially.

Rubber Sleeves for Propeller Shafts

ONE of the large maintenance problems in connection with the operation of steamers is corrosion of steel propeller shafting.

For many years the conventional method of protection against this corrosion has been to shrink bronze sleeves onto the shaft, attempting to make air and water-tight joints between these sleeves by forcing mix-

tures of red lead and boiled linseed oil into the joint. This has always been very unsatisfactory, and in cases where careless work has been done stern tube and propeller shafting has had to be condemned after less than one year's use.

Some years ago the United States Rubber Company began experimenting with rubber sleeves for this use. The first opportunity to use rubber on a large job came two years ago on the Leviathan, and the result proved so satisfactory that a number of installations have been made, particularly by the Naval authorities since that time. One experimental installation was fitted on a naval vessel in January, 1924, on a twin screw ship, one stern tube and propeller shaft being fitted with rubber sleeve joints and the other shaft having the red lead and boiled linseed oil joints. The rubber joints were seven in number and 4 inches long, two of them being exposed directly to the sea. On examination six months later it was found that the shaft under the rubber joints was practically perfect. That under the red lead and boiled linseed oil

joints had been corroded to a depth of $\frac{1}{4}$ inch and soon thereafter had to be condemned.

In applying rubber sleeves to shafting, the practice is to run rough scorings, seven or eight threads to the inch, on the shaft with an ordinary lathe tool, and to roughen the bronze bushings and taper them slightly toward the shaft. After this preparation, the surface is thoroughly cleaned, so that no oil or grease remains. The rubber is

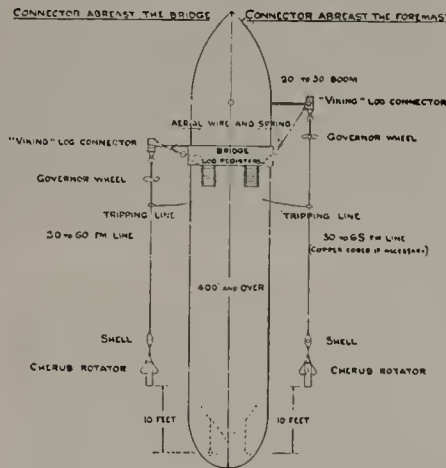
then applied and vulcanized in place.

Material used to date is the highest grade rubber, $\frac{3}{8}$ of an inch thick, and with joints properly made so as to prevent salt water from working in between the rubber and the bronze sleeve. It is the opinion of experts that these rubber sleeves will give very long life in service and that they will prove very much more economical from a first cost standpoint than the old method of bronze sleeves.

Viking Ship Log Connector

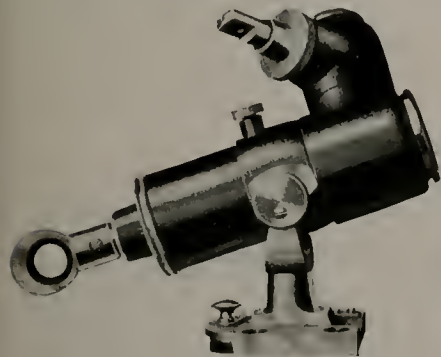
THOS. WALKER & SON, LTD., for a long time the world's foremost experts in the design and manufacture of patent ships' logs, have now brought out an attachment known as the Viking Ship-Log Connector. By means of this fixture, the Cherub register can be read directly on the bridge.

As will be seen by the illustrations herewith, the connector is mounted on the end of a beam swung outboard from any point forward best suited to the direction of the ship. An aerial wire from the transmitting end of the connector is laid to the log register on the bridge, to which it is attached through a spring so as to insure an even tension on the aerial wire. It will be obvious to any one that this method of handling a log has a great many advantages over the ordinary method of swinging over the ship's stern and having the register read by a quartermaster or a boy, who then walks the length of the



METHOD OF USING
WALKER'S "VIKING" ADJUSTABLE LOG CONNECTOR
NOT TO SCALE

run in solidified oil and will operate continuously for a week without refilling. With the rotators swung alongside, there is no danger of fouling from refuse which follows the wake of the ship nor of fouling in the ship's propellers when going astern, or of being damaged by another vessel passing close under the stern. From every angle of log operation, this new system of swing of patent log should be of great advantage to the navigator.



Walker's Viking ship log connector

ship and reports the reading to the officer on the bridge.

With the new connector the register is under the eye of the navigating officer on the bridge continuously and there is very much less room for personal error. In addition to this advantage the rotator is in better position to register correctly.

The gears of the Viking connector

ALLOY STEEL RIVET SETS



INGERSOLL - RAND COMPANY, 11 Broadway, New York, has now produced a rivet set for pneumatic hammers which lasts longer than three, four, or even more ordinary sets. Users are finding it the most economical set they can buy because of the great increase in rivets driven per

set and the avoiding of delays and losses of time due to breakage. This new set is called the Jackset.

It is made of a high quality alloy steel, which will stand a much greater degree of heat from hot rivets, without the temper becoming drawn. It is specially forged and then heat treated by a new process. The new set is the result of years of experience in building rivet sets and of hundreds of tests on different steels and heat treatments, made in the effort to produce a tool better able to withstand the stresses of riveting service than the ordinary carbon steel rivet set.

The Weight of Brass Rod.—Some months ago the Bridgeport Brass Company, Bridgeport, Connecticut, published a chart entitled "Bridgeport Ledrite Rod-O-Graph," by the use of which it is very simple to quickly and accurately estimate the weights of brass rod required for screw machine parts and other products. The chart is particularly valuable for checking those calculations. It consists of columns, the secondary column indicating the weight in pounds per thousand pieces; right hand column the diameter of rod in inches and the left hand column the length of piece, plus cut-off.

The first edition of this chart was very quickly exhausted. A second edition has now been printed and is available for free distribution to all users of brass.

CHINA, GLASS, AND SILVER WARE

Specifications, now on press, for equipment of the new passenger liner Malolo, designed by Gibbs Bros., Inc., of New York, and building under their supervision by Wm. Cramp & Sons Ship & Engine Building Co., Philadelphia, call for the largest single order of china, glass, and silver ware ever placed in the United States for an American-built ship.

In the equipment of china the bids will call for 720 salad bowls, 950 casseroles, 960 custard sets, 480 celery trays, 100 large meat platters, 1200 ice cream dishes, 2040 jelly, fruit, and pickle dishes, 7000 saucers, 9000 cups of various kinds, and over 19,500 plates of assorted sizes and uses. This does not include the china or glass for the crew, which will mean over 10,000 additional pieces.

In the glassware section the specifications call for 600 salt shakers, 600 pepper shakers, 1100 glass trays, 416 syrup jugs, 300 preserve dishes, 2080 cruetts, 640 sugar bowls, 1944 salt cellars, 1272 pitchers of 2 quarts each, 3000 oyster cocktail glasses, 6000 sundae dishes, and 22,086 tumblers of various kinds and sizes.

The exact combined total of china and glass figures 96,776 pieces.

Silver ware specifications call for 27,562 separate pieces. All flatware is to be of heavy blanks and to be of the highest grade of 18 per cent nickel silver, and to be silver plated, guaranteed to strip as follows: Teaspoons, 8 $\frac{1}{2}$ ounces to the gross; tablespoons and forks, 17 ounces to the gross; dessert spoons and forks, 14 ounces to the gross; and table knives, 10 $\frac{1}{2}$ ounces to the gross.

The steamship Malolo is to be used in the fast service between San Francisco and Hawaii to be inaugurated by the Matson Navigation Company in the spring of 1927. She will be the last word in ocean-going luxury.

NEW CANADIAN PACIFIC LINERS

THE Canadian Pacific Steamships, Ltd., is building at the Clydebank yard of John Brown & Co., two first class coastwise passenger liners, the Princess Kathleen and the Princess Marguerite. It is understood that these two vessels will maintain the company's mail and passenger service between Vancouver, Victoria, and Prince Rupert and Alaskan points.

One of these vessels, the Princess Kathleen, was recently completed and is being placed in service this spring. The principal characteristics of the two steamers are:

Length over-all	368 ft. 0 in.
Molded breadth	60 ft. 1 in.
Loaded draft	17 ft. 0 in.
Gross tonnage	5875
Net tonnage	2719

The propelling machinery in each vessel consists of two sets of Brown-Curtis turbines operating on twin



Canadian Pacific coastal liner Princess Kathleen.



A de luxe stateroom on the Canadian Pacific steamship Princess Kathleen.

screws through single reduction gearing. Steam is supplied to these turbines at 200 pounds per square inch by six single-ended cylindrical boilers and two Yarrow water-tube boilers, all fitted for burning oil fuel. The machinery on trial drove the hull at 22½ knots per hour, and it is figured to maintain a service sea speed of 21 knots.

The motif followed in the scheme of decoration of public rooms is largely Eskimo, crudely artistic totem poles forming many of the corner moldings. In every appointment these fast cross-channel type steamers carry out the high standard of equipment and finish, which has long characterized the ocean-going services of the Canadian Pacific Railways, Inc.



One end of the dining saloon of the Princess Kathleen.



Princess Kathleen's smoking room, featuring Eskimo type decorations.

MARINE INSURANCE

PACIFIC MARINE INSURANCE AGENCY, INC., OPEN FOR BUSINESS

Appleton & Cox, Inc., Make New General Agency Arrangements

THE opening of the new general agency of the Appleton & Cox companies at 330 California street, San Francisco, under the name of the Pacific Marine Insurance Agency, Inc., is an event which has proved of considerable interest in the marine insurance circles on the Pacific Coast.

The various companies under the management of Appleton & Cox, Inc., have been represented by the firm of Edward Brown & Sons, who have acted as general agents in California, Oregon, and Washington.

For some time past Appleton & Cox, Inc., have found the need of being represented on the Pacific Coast by a strictly marine organization which would be in position to serve impartially the fire agents of the various companies, and this need has led to the formation of the new corporation with which the Pacific Coast general agencies of the companies have been placed.

The officers of the corporation are:

J. R. F. Servaes, formerly manager of the marine department of Edward Brown & Sons, president;

F. Eldred Boland, vice-president;

H. W. Hauser, originally with Appleton & Cox in New York and later with Edward Brown & Sons, secretary-treasurer.

The companies represented are:

United States Merchants & Shippers Insurance Company,

Royal Exchange Assurance,

Tokio Marine and Fire Insurance Company, Ltd.,

United States Fire Insurance Company,

Agricultural Insurance Company, Fire Association of Philadelphia, Milwaukee Merchants' Insurance Company,

London & Scottish Assurance Corporation, Ltd.,

The North River Insurance Company.

In addition the corporation will act as general agent for the Indemnity Mutual Marine Assurance Company, Ltd., for Oregon and Washington.

The new general agency has large facilities, not only for ocean marine business on hulls and cargoes, but also for the great variety of special covers on merchandise in transit on

shore, floaters on personal jewelry, furs and personal effects, fine arts, musical instruments, and many other special forms of policies.

For the present the corporation is accepting new business only. The business now with the companies through Edward Brown & Sons will not be disturbed until the termination of their agency agreement.

Marine Insurance Developments of the Month

By CHARLES F. HOWELL, Contributing Editor

IT is well for people who fall into the habit of complaining about the alleged high cost of marine insurance, and there are many such, even with rates at their present ruinous low level, to reflect a moment upon the important position this activity holds in any nation's commercial life, as also in international business relations. It is the indispensable guarantor of credit, and without it the familiar bill of exchange would be merely representative of an unsecured debt and could not possibly fulfill its present usefulness. Many years ago, when William W. Bates was writing his famous work on "The American Marine," he emphasized this thought in the following words: "Marine insurance bears to commerce the relation of bodyguard, rather than that of mere servile attendant. Of the active forces which influence, control, or forbid the employment of shipping, none has greater effect than the marine insurance power."

Packing and Rate

Just as the slightest variation in the rate of interest produces a far-reaching effect in ordinary commercial relations, so does the insurance rate benefit or deter the shipowner

or exporter in his competitive relations. And the force of this thought is carried home with redoubled power when one considers the fact that it is the assured himself, in the final analysis, who determines whether that rate is to be large or small. For the underwriter goes on the record of the assured in assessing a rate. If the shipper or shipowner has been a man of efficiency, careful to study every way of reducing losses and damage claims, he is certain to reap the reward as expressed scientifically in the rate assigned him. If a shipper is careless of his packing and handling and so invites disaster to his goods, he will not only pay the penalty in high insurance rates but also stand an excellent chance of not getting his merchandise insured at all—not to mention the probable loss of his customers when they have tired of constant delays and unsatisfactory deliveries.

"The function of insurance," Professor S. S. Huebner, the well known authority, recently observed, "is by no means limited to indemnification for loss. An equally great service is the elimination of unnecessary waste or loss in the first instance."

**North British and Mercantile Insurance Company, Ltd.
The Commonwealth Insurance Company, of New York**

PARROTT & CO., Pacific Coast Marine Agents

320 California Street

E. L. BARRY, Manager

SAN FRANCISCO

FIREMAN'S FUND

Insures Hulls, Cargoes,

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PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

With respect to this important matter, he points out, insurance companies hold a strategic position, partly because of their facilities for research, and partly because of their opportunity to apply the most effective method of education, namely education through the pocketbook. Just as fire insurance companies have secured remarkable results through their fire prevention work, bonding companies in reducing embezzlement and defaults, so has an equally important service been derived from marine insurance, as respects both vessel operators and shippers of goods. The efficient and the inefficient among the assured could not, with justice, be treated identically in the matter of rates.

It is to be hoped that our readers will not find these reflections prosy. They owe it to their underwriters to occasionally take a look at the situation from the angle of the insurer.

York-Antwerp Developments

Since our last report upon the progress of thought in the United States with respect to adopting in this country the amended version of the York-Antwerp Rules arrived at last year by the international conference at Stockholm, there has been more serious attention devoted to this important subject than ever before. The Washington conference, called by the Chamber of Commerce of the United States, appointed a special committee to secure the general sentiment of American shipping interests on the subject and to report back to the conference a platform expressive of the attitude of those most concerned. That committee has been very active. It held a public hearing in New York City, at which were present representatives of shipowners, shippers, average adjusters and underwriters, and everybody had a chance at their "day in court." In addition, written suggestions and reports were in-

vited and received from numerous sources, and the committee duly reported back to the Washington conference.

The result of all this activity has been a crystallizing sentiment adverse to an endorsement of the 1924 Rules. The underwriters have reasserted their disposition to adopt the rules in the interest of international harmony and as expressing a forward step along the line of a codification of general average; but they are hopelessly in the minority. The general drift of other interests has been toward the attitude taken recently by the Merchants Association of New York; that is, in favor of rejecting rules lettered from A to G, amending several of the numbered rules, and restoring Rule XVIII of the 1890 code which provides that the law of the port of refuge shall prevail. In more detail, the attitude of the Merchants' Association, so acceptable to all but the underwriters, includes such proposals as the following: To confine Rule I to deck cargo, to arrive at the amount to be made good for cargo lost or damaged by the salvage rather than by the percentage method; to substitute the American method for arriving at the value to be made good in case of actual or constructive total loss of the ship; to remove the penalty for declaring goods at less than the real value; and to work out a more practical way of safeguarding general average deposit money as trust funds. These are not all the proposals set forth, but they are the more important. There has been much lively discussion of the question whether new freight earned on cargo, stowed in spaces made empty by jettison or discharge at a port of refuge, should be credited to general average.

Lake Hull Arrangements

Just prior to the opening of navigation on the Great Lakes the Com-

mittee on Lake Hull Statistics appointed some while ago at a full meeting of New York hull underwriters, rendered its report and recommendations based upon investigations that had extended over several months. Both report and recommendations were accepted. As a consequence, lake hull are not receiving this year the same rate as in past years. Rates quoted by companies are strictly on a merit basis. The underwriting cost of each fleet has been figured out with reference to losses based upon a three-year experience.

There is no change in the form of policy, except for the insertion of an automatic cancellation clause in order to help in the collection of premiums. In the past, premiums have not been paid any too promptly by the assured. As long a period as 120 days was taken, in certain instances, in 1924. By this new arrangement a policy will cancel if the premium has not been paid in sixty days; which is a decided improvement over the previous method of waiting sixty or ninety days for the premium and then issuing a notice of cancellation effective in sixty or ninety days more. It is believed that this automatic cancellation clause is going to prove of great assistance to brokers as well as underwriters.

Pennsylvania Shows the Way

It would be a good thing for marine insurance, and the broad interests dependent upon it, if more of our States were to follow the example of Pennsylvania in the matter of taxation. The Tax Commission of that commonwealth recently reported what is known as the Edmunds Bill, and the measure is passing along in the legislature in an encouraging manner. The house has accepted it, and there is reason to believe that the senate will do the same and that the governor will sign it. The bill is substantially the

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ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

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same as the one proposed in New York but which, unhappily, was not reached for passage this year. It provides that "every insurer organized, admitted or licensed to transact the business of marine insurance within this Commonwealth shall, with respect to such marine insurance written by it within this commonwealth, pay a tax of five per centum of that proportion of the total underwriting profit of such insurer from such marine insurance written within the United States which the gross premiums of the insurer from such marine insurance written within this commonwealth bear to the gross premiums of the insurer from such marine insurance written within the United States. The term 'underwriting profit' as used herein shall be arrived at by deducting from the net earned premiums on such marine insurance contracts written within the United States during the calendar year (1) the losses incurred and (2) expenses incurred including all taxes, state and federal, in connection with such net earned premiums."

Packing Linoleum

In underwriting linoleum it has been found by numerous insurers that shipments are frequently found damaged by breakage, and the cause of the damage is next to impossible to discover. It is generally seen that the packing is unhurt, and there are no signs of injury observable externally. Therefore it is evident that the damage must be ascribed to the general risks of transportation—the stowing and handling of cargo, combined with the inherent qualities of linoleum. Experience has demonstrated that this commodity when wound on pasteboard rollers is more exposed to breakage. Shipments on wooden rollers generally reach their destination in sound condition.

Owner's Risk of Delay

In every case where the freight

contract stipulates that the vessel is "expected" to sail in a prescribed period, the term "owner's risk of delay" is to be understood as meaning cargo owner's risk, not shipowner's risk. This is the decision of the United States Circuit Court of Appeals, second circuit, as rendered in the case of *Heiskell v. Furness, Withy & Company*. In that instance space had been engaged by the charterer in the Dutch steamer *Eigbergen* under an agreement which provided that the vessel was "expected to sail from Newport News last half of July-August," at "owner's risk of delay." The steamer sailed mid-September. The consignee of a shipment of peanut meal declined acceptance of delivery on the ground of delay. The court said:

"Undoubtedly this tonnage agreement is a mercantile contract and as such to be interpreted in accordance with its own language and not with refined constructions which are intelligible only to lawyers and scarcely to them. Not only is the promise that a vessel is expected to sail within a given period, but the whole venture is at owner's risk, and it is evident that parties contemplated uncertainty in the time of sailing."

Reinsuring Liquor Risks

Prohibition in the United States is interesting foreign reinsurers of marine business originating in this country. It is involving some nice problems of contraband which call for careful consideration. One of the best known German reinsurance authorities, Dr. Mark Levin, has expressed himself in a newspaper interview in that country in a clear and interesting manner. We quote from his observations:

"A contract concluded with the utmost good faith cannot be used as a cloak for smuggling interests, and for that reason there is no legal obligation on the part of the reinsurer to accept risks on smuggled

goods as proper cessions under an obligatory treaty or a facultative cover. The whole matter will therefore depend on the question whether the legal prescriptions issued in the United States ipso facto make the alcohol trade to that country appear as an illicit contraband trade even from the viewpoint of the laws in the home countries of the original underwriter and the reinsurers. For most of the countries of the European continent this question will probably have to be answered in the affirmative, and undoubtedly the reinsurers who are domiciled in such countries will claim the right to decline any liability for smuggling business ceded to them without their previous consent. In the event of the laws in any particular country or countries failing to afford any grounds for such action, the reinsurers domiciled in them will nevertheless contest their liability whenever the law of the country in which the original underwriter is domiciled recognizes the revenue laws of other countries."

Syndicates Win Bella Case

After long delay and much legal warfare the celebrated case of the steamer *Bella* has been won by the American Marine Insurance Syndicates through favorable decision of District Court at Baltimore. It involved a claim for \$143,000 brought when the vessel foundered 160 miles north of San Salvador two or three years ago. She was the property of the *Bella Steamship Company*, which dealt in fruit shipments. Liability was denied by the insurers on the ground that the vessel had been scuttled with the connivance of the owner for the purpose of recovering the insurance money; and on the further ground of the concealment of facts material to the risk and their misrepresentation. The case was a test case brought by the Insurance Company of North America which had a participation of five per

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cent in the whole Syndicate insurance. In the lower court the North America won, but the owners tried for an appeal, which has now been denied by the District Court.

News in Eastern Offices

W. B. Vanderhoof has resigned as manager of the New York metropolitan office of the Boston Insurance Company, and was succeeded on May 1 by the former assistant manager, John M. Williams. S. A. Blomquist becomes assistant manager.

The total loss of the Japanese freighter Raifuku Maru, which went down with all hands aboard off the coast of Nova Scotia a few weeks ago, falls upon her Japanese insurers and her London reinsurers. The hull was written in Japan and £100,000 of the reinsurance was placed in London. The cargo was covered for \$400,000 for Canadian account, with a large London reinsurance. The cargo consisted of 320,000 bushels of Canadian wheat and rye, weighing 7821 tons. Under stress of extremely heavy weather the grain began to shift, entailing a list which the vessel was unable to overcome.

Chubb & Son took four new members into their firm on June 1. They are Hawley T. Chester, until then a member of the firm of Platt, Fuller & Company, J. R. Parsons, Thomas J. Goddard and J. L. Powell. The last three have been with the Chubb office for several years. On June 1 Endicott Fiske and William Stevens were authorized to sign as attorneys. The former members of the firm were Percy Chubb, Hendon Chubb, George B. Ogden, Thomas H. Allen and Louis H. May.

W. B. Vanderhoof, whose retirement as New York marine manager of the Boston is noted above, sailed for two or three months in Europe on April 29, and it is believed that he will endeavor to secure some foreign marine insurance connections while away.

Captain C. A. McAllister, vice-president of the American Bureau of Shipping, has been appointed chairman of the committee on policies of the American Marine Association. His work will be in connection with the Marine Show, which is to be held in New York City November 9 to 14.

La Cubana of Havana has pur-

chased the control of the Union Hispano Americana. Charles R. Neidlinger of 75 Maiden Lane, New York, has been appointed liquidator of the latter company.

At the annual meeting of the Association of Marine Underwriters of the United States, held recently, the present officers were re-elected for another year. S. D. McComb was appointed national councillor and delegate to the annual meeting of the Chamber of Commerce of the United States.

J. B. Levison, president of the Fireman's Fund, has gone to England and the Continent for a brief trip.

EXPANSION OF CLEVELAND PLANT

THE Cleveland Punch & Shear Works Company, Cleveland, has completed a plant extension program including the addition of considerable new equipment that will result in an increase of about 50 per cent in its capacity. In addition the company has strengthened its organization by the appointment of Robert J. Pardee as vice-president and works manager and Arthur Schloz as press engineer. Both have been connected with the Toledo Machine & Tool Company for about fifteen years, Mr. Pardee as assistant to the president and Mr. Schloz as head designer.

Mr. Schloz recently designed what is said to have been the largest crank toggle press ever built, weighing when complete 450,000 pounds and having a capacity of 1500 tons. An important feature of this machine is the small number of bearings and joints required to operate the blank holder, thereby resulting in a saving of power and upkeep.

The Cleveland Punch & Shear Works Company, has been engaged for forty years in designing and manufacturing punching and shearing machinery. Recently it added to its regular line the designing and manufacture of power presses of all types for manufacturing stampings from sheet and bar stock, and the addition of the press department has necessitated an enlargement of the manufacturing facilities. The company has sales offices in New York, Chicago, Philadelphia, and Pittsburgh and will shortly open a sales office in Detroit.

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AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

Bids for Diesel-Electric Sea-Going Hopper Dredge Willets Point

BIDS were opened on May 11 at the office of Chief of Engineers, War Department, Washington, D. C., for the construction of the sea-going hopper dredge Willets Point. The dredge is to have a length of 200 feet 2½ inches over-all; 193 feet between perpendiculars; 41 feet beam molded; 19 feet 6 inches depth molded to deck.

The following machinery and equipment are to be supplied by the government:

Two Winton diesel engines, Model W-40, for propelling power; one Winton diesel engine, Model W-40, converted to a diesel-electric generating set, with 325-kilowatt, 230-volt, direct-connected generator; one Winton 65-kilowatt, 230-volt diesel-electric

generating set; one 12-horsepower, 230-volt motor-driven 1000-pound air compressor; two Hele-Shaw direct current motors and control for operating hopper doors; two propellers and various other items, including galley and wireless equipment.

Bids submitted by shipbuilding companies, besides including cost of hull construction, cover one 18-horsepower generating set not less than 12 kilowatts at 230 volt direct current; starting motor of the Bull-Dog type as manufactured by the Bates & Edmonds Motor Co.; one No. 5 Sharples supercentrifuge motor-driven oil separator, or the equal.

Bids submitted are tabulated below:

Name of Bidder	Price Bid	No. Days for Completion and Delivery
Bethlehem Shipbuilding Corp., Ltd.	\$618,650.00	365
Sun Shipbuilding & Dry Dock Co.	699,000.00	310
Federal Shipbuilding & Dry Dock Co.	541,700.00	11 months
The Dravo Contracting Co.	591,400.00	390
Newport News Shipbuilding & Dry Dock Co.	600,000.00	Not stated

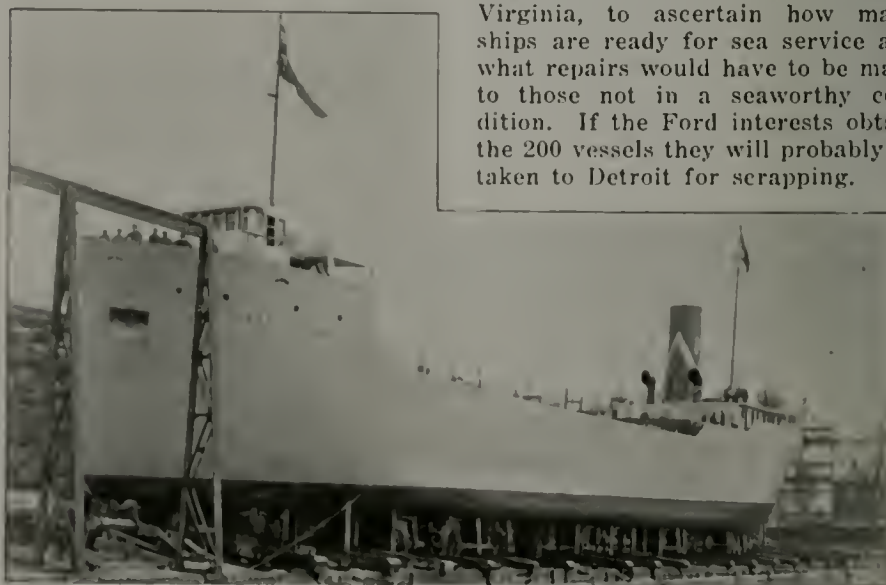
Steamship Robert J. Buck

THE Collingwood Shipbuilding Co., Ltd., Collingwood, Ontario, has just completed the construction of the steamship Robert J. Buck, which is the first of three similar vessels recently ordered from this firm by The Geo. Hall Coal & Shipping Corp. of Montreal. The keel for this ship was laid on January 31 of this year, and the launching took place with the machinery on board and vessel almost completed on May 9.

The vessel, which is of the raised quarter deck type, is full canal size. She has been constructed under the special survey and to the highest class of the British Corporation Society for service on the Great Lakes and Gulf of St. Lawrence. Structural strength is provided considerably in excess of that required by the classification society to provide against the severe local stresses to which vessels are subjected in the canal trade.

The leading particulars follow:

Length over-all 259' 7"
Length B. P. 252' 0"



Steamship Robert J. Buck, recently completed at the Collingwood Shipbuilding Company Collingwood, Ontario, for the George Hall Coal and Shipping Corporation, Montreal.

Breadth molded 43' 0"
Depth molded 19' 0"
Raised quarter deck 3' 0"
Deadweight on canal draught, long tons, about 2400

The vessel has two cargo holds, each served by three hatches. One of the hatches to each hold is made extra large to facilitate handling steel cargoes. Four mooring winches are fitted, one on forecastle, one on upper deck forward, and two on raised quarter deck. The layout of crews' accommodation, which is commodious, is in accordance with the usual practice for lake vessels. The captain's quarters, chief engineer's room, and dining room are tastefully panelled in oak. The vessel is fitted with electric light and with a refrigerating plant for ship's stores. The ballast pumping equipment is of large capacity for rapidly filling or emptying the various ballast tanks.

The vessel is propelled by one triple expansion surface condensing engine having cylinders 15½ inches to 26 inches and 44 inches diameter with a stroke of 26 inches. Steam is supplied by two Scotch return tubular boilers 12 feet 6 inches diameter by 10 feet 10 inches long, working under natural draught at a pressure of 195 pounds per square inch.

W. L. Williams, a chief engineer connected with the Ford Motor Co., and two other engineers of the company are engaged in an inspection of the 345 laid-up Shipping Board vessels in the James River, Virginia, to ascertain how many ships are ready for sea service and what repairs would have to be made to those not in a seaworthy condition. If the Ford interests obtain the 200 vessels they will probably be taken to Detroit for scrapping.

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OIL BARGE MOTORMATES

A new oil barge for the Associated Oil Company, christened Motormates, was recently launched by the Hanlon Drydock & Shipbuilding Co., Oakland, California. The barge has the following dimensions:

Length over-all 120' 0"
Beam molded 32' 0"
Depth, molded 8' 6"
Capacity, barrels of oil. 2500

The Motormates, which will go into service about the first of June, is equipped with two Northern pumps of 750 barrels per hour capacity each. She has twin screws and power is supplied by two Atlas-Imperial gas engines of 80 horsepower each. A Delco 850-watt lighting set is installed.

The oil barge Motormates was ordered by the Associated Oil Company for the purpose of delivering small lots of their products from the refinery at Avon on upper San Francisco Bay to their various distributing stations at San Francisco, Oakland, Alameda, and other bay ports.

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Motormates, self-propelled oil barge built by the Hanlon Drydock & Shipbuilding Company, Oakland, California, for the Associated Oil Company.

Work in Prospect

One of the principal contracts for ship construction to which American yards can look forward at the present time is for the construction of two passenger and freight vessels for the Eastern Steamship Co., to be used on their New York-Miami and Boston-Yarmouth services. The plans as issued originally by Theodore E. Ferris, naval architect, are being redesigned. Specifications will soon be issued and bids asked from American shipyards.

The Bureau of Lighthouses at Washington is preparing plans for a river tender for the Columbia and Willamette rivers to cost about \$25,000. Bids will be asked by Robert Warrack, in charge of the 17th Lighthouse District, Portland, Oregon, as soon as plans are received at Portland from the Washington office.

It is quite probable that an announcement will shortly be made by the Southern Pacific Steamship Lines, New York, to the effect that they are planning the construction of a new passenger vessel to replace the steamer Bienville, which was almost totally destroyed by fire at New Orleans a short time after having gone into service. Lewis J. Spence, executive officer of the Southern Pacific Steamship Lines, announced recently that the Bienville would be reconditioned as a cargo vessel only, as an entirely new vessel for the passenger trade could be built in very little more time than would be required to rebuild the superstructure of the Bienville and install the same high-class passenger accommodations as

were embodied in the vessel before they were destroyed by fire.

Recent Contracts

Pacific Coast Engineering Co., Oakland, Calif., was lowest bidder for the construction of two barges for the General Petroleum Co. of Los Angeles. One barge is to be 131 feet long, 40 feet beam, 11 feet 6 inches depth, and have a capacity of 7000 barrels of oil. The bid submitted by Pacific Coast Engineering Co. for this barge was \$62,948. The other barge, on which the low bid was \$55,666, is to be 120 feet long, 38 feet beam, 9 feet 6 inches depth, is to have capacity of 4000 barrels of oil. Bids were also submitted by Bethlehem Shipbuilding Corp., Moore Dry Dock Co., Los Angeles Shipbuilding Corp., and Hanlon Dry Docking Co., Oakland.

Los Angeles Shipbuilding & Drydock Corp. has an order from the Los Angeles Fire Department for a fireboat to cost \$214,000. The boat will be 93 feet 4 inches between perpendiculars, 19 feet beam, 6 feet draft, and will have a speed of 17 miles. Power for propulsion and pumps will be supplied by seven 300 horsepower Winton gas engines. This company also has an order for a 50-foot bay barge for the Union Oil Co.

Howard Ship Yards & Dock Co., Jeffersonville, Ind., was recently awarded contract by the U. S. Army Engineers, Vicksburg, Miss., for a stern-wheel towboat, 108 feet 6 inches between perpendiculars, 23 feet beam, 3 feet loaded draft. Non-condensing steam engines are to be installed.

Nashville Bridge Co., Nashville, Tenn., has an order for two twin-

IN ATLANTIC COAST SHIPYARDS

**SHIP REPAIRING
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screw towboats, 75 feet long, 19 feet beam, 4½ loaded draft, to be equipped with 240 B. H. P. diesel engines.

Newport News Shipbuilding & Drydock Co., Newport News, Va., has been awarded contract for constructing a diesel-electric, 20-inch, pipeline suction dredge for the U. S. Army Engineers, Philadelphia, Pa. The dredge is to be 230 feet long, 40 feet beam, 14 feet depth, and equipped with McIntosh & Seymour diesel engines. The cost of the dredge will be \$720,000. Two engines are to be direct-connected to direct current generators and one is to be direct-connected to the pump.

Keel-layings

Oil barge, for Union Oil Co. of Calif., by Los Angeles Shipbuilding & Drydock Corp., May 8.

Towboat, for the San Francisco Bridge Co., by Robertson's Shipyard, Alameda, Calif., May 4.

By the Bath Iron Works, Mystic, schooner yacht for Irving Eldridge, April 15; Diamond W., schooner yacht for Chas. E. F. McCann, Mar. 14; Nokomis, schooner yacht for Wm. A. W. Stewart, Mar. 16; Venturer, schooner yacht for Harold Wesson, Mar. 18; Ahjee, schooner yacht for David H. Morris, Mar. 20; schooner yacht for G. M. Hecksher, Apr. 8.

Malolo, express passenger and freight liner for the Matson Navigation Co., by Wm. Cramp & Sons, May 4.

Bulk freighter, for Columbia Steamship Co., Cleveland, by Great Lakes Engineering Works, River Rouge, April 7.

Nashville B., by Nashville Bridge Co., May 1; twin screw tunnel type towboat, May 5.

Launchings

Barge, for the Pan American Petroleum Co., by the Federal Shipbuilding & Dry Dock Co., Apr. 14.

Union, sternwheel towboat, for Union Sand & Gravel Co., Huntington, W. Va., by Howard Ship Yards & Dry Dock Co., May 25; New Orleans, catamaran type river boat, for Algiers Public Service Co., May 19.

Seminole, combination steamer, for the Clyde Steamship Co., by Newport News Shipbuilding & Drydock Co., Apr. 14.

Maurice Connelly, ferryboat, for

the City of New York, by Tebo Yacht Basin, Apr. 23.

Lookout, towboat, for U. S. Engineers, Nashville, Tenn., by Chas. Ward Engineering Works, Charleston, W. Va., Apr. 15.

Deliveries

Yuba, snag boat, for the U. S. Engineers, by A. W. de Young Boat & Shipbuilding Co., Alameda, Calif., Apr. 30; South Shore II, twin screw bay freighter, for the South Shore Port Co., San Francisco, May 1.

California Petroleum Barge No. 1, to Petroleum Midway of Calif., by the Los Angeles Shipbuilding Corp., May 1.

Nobska, passenger and freight steamer, to the New England Steamship Co., by Bath Iron Works, Ltd., Apr. 3.

El Oceano, freight steamer, to Southern Pacific Co., by Federal Shipbuilding & Drydock Co., May 1.

Derrick boat hull, to U. S. Engineers, by Marietta Manufacturing Co., May 5.

Erle Barrett, steel flush deck barge, to the Barrett Line, Cincinnati, by Midland Barge Co., Midland, Pa., Apr. 21; Lawrence Barrett, sister ship, Apr. 30.

Gleniffer, bulk freighter, to Great Lakes Transportation Co., by Midland Shipbuilding Co., Midland, Ont., Apr. 11.

Barge, to International Cement Corp., by New York Shipbuilding Corp., Apr.

Repairs

The Smith & Watson Iron Works, Portland, Ore., was recently awarded contract for repairing the Japanese steamer Yoshida Maru, damaged by collision with the McCormick freighter Chas. R. McCormick. Bids submitted on the repairs to the Yoshida Maru were: Smith & Watson Iron Works, \$67,500; Albina Marine Iron Works, Portland, \$69,740; Commercial Iron Works, Portland, \$70,875; Helser Machine Works, \$71,500; Willamette Iron & Steel Works, \$73,750; Todd Dry Docks, Inc., Seattle, \$72,000.

The Willamette Iron & Steel Works, Portland, was the low bidder on repairs to the Chas. R. McCormick. Bids submitted on this job were: Willamette Iron & Steel Works, \$45,000; Todd Dry Docks,

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Inc., Seattle, \$46,700; Albina Marine Iron Works, Portland, \$47,250; Commercial Iron Works, \$48,500; Helser Machine Works, \$50,375.

* * *

The steamer Bienville of the Southern Pacific Steamship Line is being repaired and converted into a cargo carrier at the Robins Dry Dock & Repair plant of the Todd Shipyards Corporation, New York, following her extensive fire damage.

* * *

The Puget Sound Navigation Co., Seattle, has announced that they are to have their steamer Kulshan, which operates between Seattle and Bellingham, converted to a motorship. Steam engines furnishing 1050 indicated horsepower will be changed to Sumner diesel engines of 800 brake horsepower. They will be 2-cycle, direct-reversible, crosshead type, designed and built at Seattle.

Shipbuilding and Shipyard Notes

Without any ceremony marking the occasion, the hull of the Sacramento River steamer Delta King was launched at Stockton, California, on May 9. The Delta King is the first of two large steamers building by the California Navigation Co. for their Sacramento River-San Francisco Bay trade. The second steamer is named Delta Queen. The boats are of 800 tons capacity. They are 285 feet long and 58 feet beam. Steel for the hulls was fabricated in Scotland and shipped to California by water. Every modern convenience for passengers and devices for handling of freight are being installed on the new boats. Cross compound steam engines, 26 inches by 52 inches by 10 foot stroke are to furnish the propulsion power. These engines are being built at the San Francisco shop of C. N. Evans & Co. Steam at 225 pounds pressure will be supplied by two Shipping Board type Scotch marine boilers.

The new diesel-powered tug Mahoe was recently completed by the Ballard Marine Railway Co. of Seattle for Young Brother of Honolulu. The tug is 120 feet long, 24.6 feet beam, 12.6 feet draft. She is equipped with two Fairbanks-Morse diesel engines of 360 horsepower each. All deck equipment is electric-driven, a 45-horsepower semi-diesel engine supplying power for the generator. Coolidge propellers, designed by L. H. Coolidge, the Seattle naval architect who designed the tug, were installed. The tug has a cruising radius of 7500 miles and on her trials attained a speed of 12.6 knots.

Captain R. D. Gatewood, in charge of the dieselization program of the Shipping Board, with other officials of the Emergency Fleet Corporation, during May visited San Francisco and Seattle for personal inspection of the freighter West Hartland, laid up at San Francisco, and West Harts, laid up at Seattle. These are the only two vessels on the Pacific Coast which have been selected for conversion to motorships by the Shipping Board. The vessels are now being overhauled and painted preparatory to their conversion.

Lake Washington Shipyards, with plant at Houghton, May 17 leunched a new cannery tender, Nakeen, for the A & P. Products Co. of Seattle. The vessel is 65 feet long, 18 feet beam, equipped with a 100-horsepower Fairbanks-Morse diesel engine and went into the water already fu-

eled, outfitted, and provisioned. After the trial trip on Lake Washington the vessel left for Bristol Bay, where her owners will begin operation of a new salmon cannery on July 1.

Holding that the United States is the real party in interest and that the Emergency Fleet Corporation is a mere agent with no beneficial interest, Federal Judge Jeremiah Netterer has handed down a decision denying the demurrer filed by the Skinner & Eddy Corporation in the suit of the government against the shipbuilders asking for a judgment of \$7,536,432.08, charged as being overpayment by the government to the shipbuilders on wartime ship contracts.

Plans are now on foot for the salvaging of the engines of the Associated Oil Company's tanker Alden Anderson, which was destroyed by fire near the company's refinery at Avon, California, last October. The tanker drifted out into the mud flats and has lain there since the fire. As the hulk burned, the steel sides of the tanker curved inward, and these, together with the bulkheads of the vessel, saved the engines from serious damage. Frederick Swank, demolition engineer, has been blasting away the forward part of the vessel and bulkheading the after part to prevent it from sinking into the mud. The wreckage is being placed on barges for towing to the wrecking yards; and the after part of the vessel containing the engines, when properly bulkheaded, will be towed to San Francisco.

Another important job in progress at the Houghton, Lake Washington, plant of the Lake Washington Shipyard, Seattle, is the construction of the wooden ferryboat Kitsap for the Kitsap County Transportation Co. The vessel is 168 feet long, 48 feet beam, with a capacity for 100 automobiles and approximately 2000 passengers. Washington-Estep marine

4-cycle, full diesel engine, capable of developing 800 horsepower, will be installed. The engine is building at the Washington Iron Works, Seattle. The boat will be of double-end, double deck type, and will go into service on Puget Sound about July 1.

The tug Maoi, ex-Moositauka, which was purchased several months ago from the Shipping Board by the Matson Navigation Company, is now in the pineapple barge towing service in the Hawaiian Islands, having reached there from Seattle, with the barge Helene with 400,000 feet of lumber in tow. The tug was converted from coal to oil burning by the Tietjen & Lange Dry Dock Company, Hoboken, New Jersey. Todd burners were installed, two boilers, all valves 1½ inch and over were cast steel bodies with monel trim, all steel tubing expanded in forged steel flanges. All bulkhead fittings were cast steel flanged. At the Bethlehem plant at San Francisco a new towing engine was installed. The schooner Helene was converted to a barge by the Simon Engineering Company, Seattle.

The Atlantic Coast Shipbuilders' Association has gone on record as favoring a limitation of ship repair plant liability, and at its meeting on April 13 the administrative council endorsed a tentative clause for future repair contracts which was recommended to the membership for adoption. The specification, which is subject to possible revision, reads as follows:

"The contractor shall not be liable, directly or indirectly, in contract, tort or otherwise, to a vessel or cargo or its respective owners, charterers, underwriters, or concerned, for any damages to the vessel or its equipment, movable stores or cargo, or any consequences thereof, unless such damage is caused by the negligence of the contractor or its employes, and in no event shall the contractor's total liability for such negligence exceed the sum of \$100,000."

Progress of Construction

Pacific Coast

A. W. de YOUNG BOAT & SHIP-BUILDING CO., INC. Alameda, Calif

Purchasing Agent, Warren A. Casey.

Yuba, snag boat, U. S. Engineers; 166 length; 37.8 beam; 5 depth; stern wheel, oil burning; accommodations for 40 crew; keel Nov 19, 24; launched 1-17-25, delivered Apr 30 25.

South Shore 11, twin-screw Hay freighter, South Shore Port Co., S. F.; 105 lmg; 32 ft 8 in beam; 7 ft 8 in depth; 2 90 HP Atlas Imperial diesel engs., launched Mar 30 25, delivered May 1 25.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

John H., cannery tender, Libby, McNeill & Libby; 65x17x7; keel Feb 15 25; launch Apr 18/25, est; deliver Apr 22 25, est.

Selma S., cannery tender, sister to above; launch Apr 18 25, est; delivery Apr 22/25, est. Twelve gill net sailboats, Libby, McNeill & Libby; 28x8x3.

No name, twin screw tugboat, Cary Davis Tug & Barge Co., Seattle; 65x18x5 ft; 85 HP Enterprise diesel eng; keel Mar 16 25; launch Apr 22 25, est; deliver May 1/25, est.

No name, cannery tender, Sunny Point Packing Co., Seattle; 86 length by 19 beam; 165 HP Atlas Imperial diesel eng; keel Apr 2 25; launch May 25 25, est; deliver June 10/25, est.



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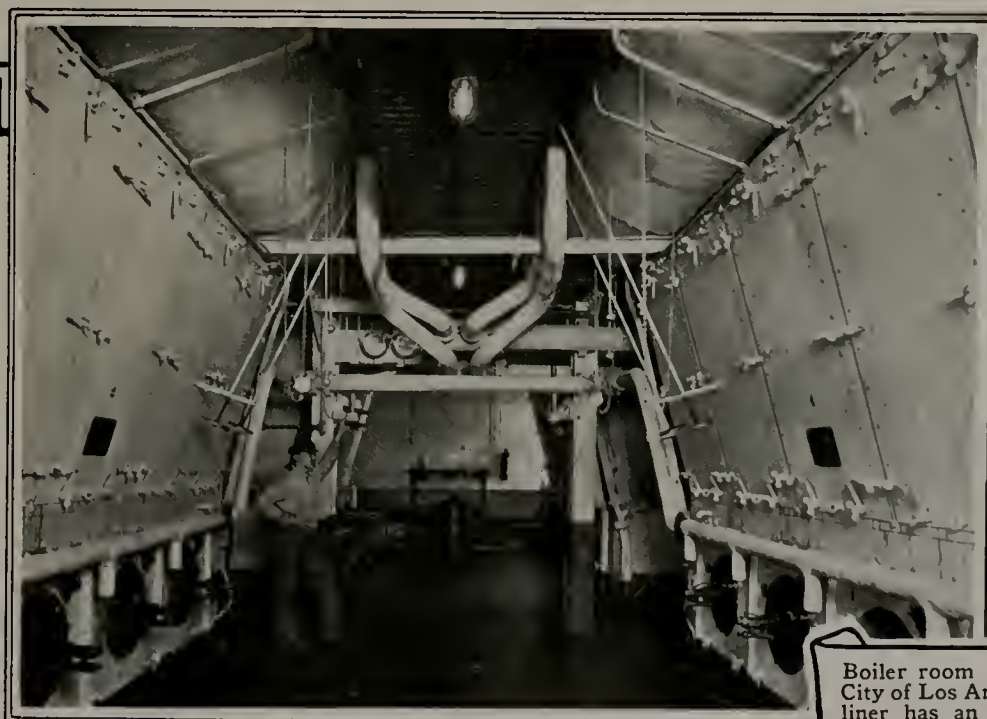
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LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION

San Pedro, Calif.

Calif. Petrol Barge No. 1, hull 46, oil barge for Petroleum Midway of Calif., 131 ft LBP, 40 ft beam, 9 ft 10 in loaded draft, 1330 DWT, keel Mar13/25, launched Apr28/25, delivered May1/25.

No name, hull 47, straight stem and elliptical stern, one deck, fireboat, for Los Angeles Fire Department, 93 ft 4 in LBP, 19 ft beam, 6 ft 6 in loaded draft, 12 mi speed, 900 SHP, twin gas engs, keel May15/25, est., deliver Oct 3/25, est.

No name, hull 48, barge, Union Oil Co. of Calif., 50 ft LBP, 20 ft beam, 4 ft 6 in loaded draft, 130 DWT, keel May8/25.

NAVY YARD

Puget Sound

Holland, submarine tender for government; 460 LBP, 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 HHP; two WT express type boilers; 10,000 tons disp; keel April1/21, launch July1/25, est.; deliver Jan1/26, est.

ROBERTSON'S SHIPYARD

Alameda, Calif.

No name, towboat, San Francisco Bridge Co.; 50 LBP, 15 beam, 5 draft, 100 HHP, Union diesel eng, keel May4/25, deliver July1/25, est. Barge, 60x26x6 ft, keel Apr27/25.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY

Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar. One towboat, Carnegie Steel Co.; 170x39x6 ft; deliver July 25, est.

Six sand barges, J. K. Davison & Bro.; 135 x26x10; deliver June/25.

One acid tank barge, Carnegie Steel Co.; 175 ft by 26 ft by 11 ft; deliver summer 1925.

One cement barge, Kosmos Portland Cement Co.; 175x32x8.

Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.

Four barges, U. S. Engineers; 80x26x5.

THE AMERICAN SHIP BUILDING COMPANY

Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.

No name, hull 790, self-unloading stone carrier, Bradley Transportation Co.; 566 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers.

BATH IRON WORKS, LTD

Bath, Maine

Purchasing Agent: J. L. P. Burke. Nobska, hull 98, passenger and freight steamer, New England Steamship Co.; 202 LBP; 36 beam; 10 loaded draft; 15 knots loaded speed; capacity 2000 passengers, 100 tons freight; one 4-cycle, TE eng, 1200 HHP; 2 B&W boilers, 4450 square feet HES; keel Nov 1/24, launched Mar24/25; delivered Apr3/25.

Fel Sern, hull 99, schooner yacht, Irving Cox; 58 L.O.A.; 12 beam; 7 ft 6 in draft; Kermath engs; keel Jan 20/25; launch May/25, est.; deliver June 25, est.

Saghaya, hull 100, schooner yacht, same as above, for Howard C. Smith; keel Jan20/25; launch May 25, est.; deliver June/25, est.

Flying Fish, hull 101, schooner yacht, same as above, for W. F. Carey; keel Jan23/25; launch May 25, est.; deliver June 25, est.

Margaret Mary, hull 102, schooner yacht, for John Bossett; 58 L.O.A.; 12 beam; 7-6 draft; Red Wing eng; keel Feb3/25; launch May/25, est.; deliver June 25, est.

Cygnat, hull 103, schooner yacht, for Paul Hammond; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Feb2/25, launch June 25, est.; deliver June 25, est.

Seven Seas, hull 104, schooner yacht, for Van S. Merle-Smith, same as above; keel Feb23/25; launch May 25, est.; deliver June 25, est.

Mystic, hull 105, schooner yacht, for Irving Eldredge, same as above, keel Apr15/25.

Diamond W., hull 106, schooner yacht, for Chas. E. F. McCann, same as above; keel Mar 14/25.

Nekema, hull 107, schooner yacht, for Wm. A. W. Stewart; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Mar16/25.

Venturer, hull 108, schooner yacht, for Har- M. W., same as above, keel Mar18/25.

Myra, hull 109, schooner yacht, for Dave H. M., same as above, keel Mar20/25.

No name, hull 110, schooner yacht, for G. M. H., same as above, keel Mar22/25.

Elmer, hull 111, schooner yacht, for Parker H., same as above, keel Mar24/25.

Clara, hull 112, schooner yacht, for New- C., same as above, keel Mar26/25.

Theresa, hull 113, schooner yacht, for F. L. C., same as above, keel Mar28/25.

No name, hull 114, schooner yacht, for Julius Fleischman, same as above; keel May/25, est.

Yo-Ho, hull 115, express cruiser, Clifford Brokaw, 50 ft over-all; 10 ft beam; 3 ft draft; keel Jan20/25; launch and deliver May/25, est.

No name, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 HHP each; keel Jan20/25; launch and deliver June 25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT

Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N. Massachusetts, hull 1400, battleship U.S.N.; to be scrapped.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT

Wilmington, Del.

Hull 3496, tug, J. W. Sullivan Co., hull only; 93 ft 6 in LBP; 25 ft beam; 9 loaded draft.

Hull 3497, same as above.

Hull 3498, carfloat, D. L. & W. R. R.; 326 LBP; 40 beam; 5 loaded draft.

Hull 3499, sister to above.

CHARLESTON DRY DOCK & MACHINERY COMPANY

Charleston, S. C.

Purchasing Agent: Charles R. Valk.

Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 LBP; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 HPS; keel Nov/24; launched Feb24/25; deliver Oct/25, est.

Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 LBP; 33 beam; 2 ft 11 in loaded draft;

1 Scotch boiler, 11 ft 6 in by 12 ft 3 in; keel Feb25/25; launch May/25, est.; deliver Dec/25, est.

COLLINGWOOD SHIPBUILDING CO.

Collingwood, Ontario

Purchasing Agent: E. Podmore.

Robt. J. Buck, hull No. 74, bulk freighter, Geo. Hall Coal & Shipping Corp., Montreal; 252 LBP; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface condensing; 700 HHP 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Jan31/25; launch May9/25.

Walter B. Reynolds, hull No. 75, bulk freighter; sister to above; keel Feb2/25; launch June2/25, est.

Robert J. Kernan, hull No. 76, bulk freighter, sister to above; keel May2/25.

CONSOLIDATED SHIPBUILDING CORPORATION

Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 180-HHP Winton diesel engs.

Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.

Hull 2797, cruiser for R. F. Hoyt, 81 ft long;

2 Wright & Typhoe engs, 500 HHP each.

Hull 2798, cruiser for H. C. Stutz, 65 ft long;

2 180-HHP Speedways.

Hull 2799, cruiser for Elliott & Co., 44 ft long; 180-HHP Speedway.

Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150-HHP Speedways.

Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300-HHP Speedways.

Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300-HHP Speedways.

Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO.

Philadelphia, Pa.

Purchasing Agent: Ed. C. Gechr.

Malolo, express passenger and freight liner, Matson Navigation Co.; 582 L.O.A.; 577 length at water line; 83 ft beam; depth molded to C deck 54 ft; displacement 22,050 tons; 8250 DW T; speed 22 knots regular, 23 knots maximum; 25,000 shaft horsepower; Cramp-Parsons turbines; oil burning B&W water tube boilers; keel May 4/25.

Hulls 510-17, 8 steel screws, City of Philadelphia; 500 cu yds capacity; deliver Oct/25, est.

DEFOE BOAT & MOTOR WORKS

Bay City, Mich.

Purchasing Agent: G. O. Williams.

Hull No. 79, wooden cruiser, E. F. Cooley-Lansing; 42 ft 10 in long; 10 ft beam; 3 ft draft, 12 mi speed; Scripps E-6 gas engs; keel Feb1/25; launch May25/25, est., deliver June 25, est.

Hull No. 80, steel vessel, U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 210 DWT; 300 HHP, diesel engs; keel Feb28/25; launched Apr30/25.

Hull No. 81, sister to above; keel Feb28/25; launch Jan1/25, est.

Hull No. 82, sister to above; keel Mar11/25; launch June1/25, est.

Hull No. 83, sister to above; keel Mar12/25; launch June10/25, est.

Hull No. 84, sister to above; keel Mar21/25; launch June10/25, est.

Hull No. 85, sister to above; keel Apr1/25; launch June 10, 25, est.

Hull No. 86, sister to above; launch June10/25, est.

Hull No. 87, sister to above; launch June25/25, est.

Hull No. 88, sister to above; launch June25/25, est.

Hull No. 89, sister to above; launch June25/25, est.

DRAVO CONTRACTING COMPANY

Pittsburgh, Pa.

Hull 344, one sand and gravel barge, builder's account; 135x72x8; 320 tons.

Hulls 367-375, inc., 9 steel barges for Mississippi River Commission, Memphis; 120 ft by 30 ft by 7 ft 6 in; 430 gro tons each.

Hulls 395-404, inc., 10 steel barges, for stock, 100x26x6-6; 135 gro tons ea.

Hull 405, diesel engine towboat, Stewart Sand Co., Kansas City; 120 HHP; 25 tons.

Hull 406, diesel engine towboat, for stock; same as above.

Hulls 407-412, inc., 6 sand and gravel barges for Ohio River Sand Co., Louisville; 130x30x7-6; 830 gro tons ea.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY

Kearny, N. J.

Purchasing Agent: R. S. Page.

El Oceano, hull 81, freight strmr. Southern Pacific Co.; 433 LBP; 56 beam; 26 loaded draft; 1444 loaded speed; 7950 DWT; turbine engs, 6000 HHP; 4 B&W boilers; keel Sept22/24; launched Feb14/25; delivered May1/25.

No name, hull 82, barge, Pan American Petroleum Co.; 150 LBP; 30 beam; 10 loaded draft; 540 DWT; keel Feb19/25; launched Apr 14/25.

GREAT LAKES ENGINEERING WORKS

River Rouge, Mich.

Purchasing Agent: Chas. Short.

William C. Atwater, hull 249, bulk freighter, Wilson Transit Co.; 580 LBP; 60 beam; 20 loaded draft; 12 mi speed; 12,000 DWT; TE 2000 HHP engs; 3 Scotch boilers, 13 ft 6 in by 11 ft; keel Dec23/24; launched Apr24/25; de liver June/25, est.

Wm. G. Mather, hull 250, freighter, Cleveland Cliffs S. S. Co., Cleveland; 618 L.O.A.; 592 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Feb10/25; launch June1/25, est.; deliver July25/25, est.

No name, hull 251, bulk freighter, Columbia S. S. Co., Cleveland; 618 L.O.A.; 492 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Apr7/25; launch Aug1/25, est.; deliver Oct1/25, est.

HOWARD SHIP YARDS & DOCK COMPANY

Jeffersonville, Ind.

Purchasing Agent: Jas. E. Howard.

Algiers, hull 1577, Catamaran type, for Algiers Public Service Co.; 144 LBP; 67 beam on deck; 4 ft 6 in loaded draft; non-condensing engs, 18 inx6 ft; 2 fire-tube boilers, 50 inx26 ft; keel Sept27/24; launched Mar28/25.

New Orleans, hull 1578, sister to above; keel Nov4/24; launched May19/25.

Union, hull 1579, sternwheel towboat, for Union Sand & Gravel Co., Huntington, W. Va.; 130 ft LBP; 28 ft beam; 3 ft 6 in loaded draft; non-condensing engs, 15 inx6 ft; 3 fire-tube boilers, 44 inx22 ft; keel Mar31/25; launched May 25/25.

U. S. Chicot, hull 1580, sternwheel towboat, U. S. Engineers, Vicksburg, Miss.; 108 ft 6 in LBP; 23 ft beam; 3 ft loaded draft; non-condensing engs; 15 inx6 ft; 2 fire-tube boilers, 40 inx22 ft.

Hull 1581, 15-ton derrick boat hull, for U. S. Engineers, Pittsburgh, Pa.

MANITOWOC SHIPBUILDING CORPORATION

Manitowoc, Wis.

Purchasing Agent: H. Meyer.

No name, hull 216, freighter, Rockport Steamship Co.; 470 L.O.A.; 60 beam; 31 depth.

Hulls 217-18, dump scows, Great Lakes Dredge & Dock Co.; 1000 cu yds capacity.

MARIETTA MANUFACTURING CO

Point Pleasant, W. Va.

Purchasing Agent: S. C. Wilhelm.

Cary Bird, hull 138, sternwheel towboat; 125x30x5-2; tandem comp engs; Western rivers return tubular boilers; keel May1/24; launched Oct2/24; delivered Apr30/25.

No name, hull 139, ferryboat; 141 ft long; 30 ft beam; 5 ft 2 in draft; tandem comp engs; Western rivers return tubular boilers; keel May 15/24; launched Feb15/25; deliver Apr15/25, set.

Hull 143, derrick boat hull, U. S. government; 70 long, 24 beam; 4-9 draft; keel Mar1/25; launched May1/25; delivered May5/25.

MIDLAND BARGE COMPANY Midland, Pa.

Purchasing Agent: R. C. Will, Sales Manager.
Erle Barrett, steel flush deck barge, Barrett Line, Cincinnati, O.; 225 ft long; 36 ft beam; 8 ft depth; 1500 DWT; launched and delivered Apr 21/25.

Lawrence Barrett, sister to above; keel Apr 1/25; launched and delivered Apr 30/25.
Grace Barrett, sister to above; launch May 30/25, est.

No name, steel wharfbarge, Coney Island, Inc., Cincinnati, O.; 225 ft long; 45 ft beam; 6 ft depth; steel superstructure and roof; launch and deliver June 1/25.

MIDLAND SHIPBUILDING COMPANY, LTD. Midland, Ontario

Purchasing Agent: R. S. McLaughlin.
Gleniffer, hull 12, bulk freighter, Great Lakes Transp. Co.; 560 LOA; 60 beam; 20-6 draft; 3 Scotch boilers; keel May 8/24; launched Nov 18/24; delivered Apr 11/25.

No name, hull 14, single deck freighter, Great Lakes Transp. Co., Ltd., Midland, Ontario; 582 LBP; 60 beam; 20 loaded draft; 11 knots speed; 12,000 DWT; TE engs, 2800 IHP; 3 Scotch boilers, 15 ft 3 in x 11 ft 6 in; keel Mar 16/25, est; launch Oct 25/25, est; deliver Nov 25/25, est.

NASHVILLE BRIDGE COMPANY Nashville, Tenn.

Purchasing Agent: Leo E. Wege.
Chanberlin, hull 91, steamboat hull, principals not named; 140 LBP; 31 beam; 5 loaded draft; keel June 1/25, est; launch and deliver June 15/25, est.

Nashville B., hull 92, diesel towboat, builders' account; 110 LBP; 28 beam; 5 loaded draft; 400 IHP; diesel engs; keel May 1/25; launch May 15/25, est.

No name, hull 93, barge, for builder's account; 120 LBP; 30 beam; 7 loaded draft.

No name, hull 94, diesel-electric towboat, U. S. Engineers; 70 LBP; 17 beam; 4 draft; 150 IHP eng; keel Aug 25/25, est.

No name, hull 95, same as above; keel Aug 25/25, est.

No name, hull 96, twin screw, tunnel type towboat; 100 LBP; 26 beam; 4 draft; 480 IHP diesel eng; keel May 5/25; launch July 1/25, est; deliver Aug 1/25, est.

No name, hull 97, towboat, twin screw; 75 LBP; 19 beam; 4½ loaded draft; 340 IHP diesel engs; keel Oct 1/25, est; deliver Dec 1/25, est.

No name, hull 98, sister to above; keel Oct 10/25, est; deliver Dec 15/25, est.

NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY Newport News, Va.

Purchasing Agent: Jas. Plummer, 233 Broadway, New York City.

Cherokee, hull 274, combination steamer, Clyde S. S. Co.; 387-6 LBP; 54 beam; 31-6 depth; 14½ loaded speed; 2600 DWT; Newport News Curtis engs; 4200 SHP; 4 Scotch boilers; keel Aug 12/24; launched Feb 10/25; deliver June 25/25, est.

Seminole, hull 275, sister to above; keel Sept 9/24; launched Apr 14/25.

Coamo, hull 280, combination steamer, New York and Porto Rico Steamship Co.; 412 LBP; 59 ft 6 in beam; 35 depth; speed 15½ knots; Newnort News-Curtis turbines; 6000 SHP; Scotch boilers; keel Jan 19/25; launch July 25/25, est.

Norfolk, hull No. 282, dredge hull, Atlantic Gulf & Pacific Co. of New York; 162 long; 38 beam; 14 depth; keel Nov 19/24; launched Feb 23/25; deliver May 25/25, est.

Mohawk, hull 287, combination steamer, Clyde S. S. Co.; 387 ft 6 in LBP; 54 ft beam; 31 ft 6 in draft; 14½ loaded speed; 2600 DWT; Newport News-Curtis turbines, 4200 SHP; 4 Scotch boilers; keel Apr 1/25; deliver Jan 1/26, est.

No name, hull 288, combination passenger and freight steamer, Merchants & Miners Transportation Co., Baltimore, Md.; 350 length; 52 beam; 36 depth; 13½ mi speed; TE eng; 4 Scotch oil-fired boilers; keel July 25/25, est; deliver May 1/26, est.

No name, hull 289, sister to above; keel Sept 25/25, est.

No name, hull 290, sister to above; keel Nov 25/25, est.

Hull 291, barge, for District Engineers, U. S. A., Wilmington, N. C.; 80 ft long; 26 ft beam; 5 ft depth.

Hull 292, diesel-electric 20-in pipe line suction dredge, U. S. Engineers, Philadelphia; 230 ft long; 40 ft beam; 14 ft depth; McIntosh & Seymour diesel engs.

NEW YORK SHIPBUILDING CORP. Camden, N. J.

Purchasing Agent: L. G. Buckwalter.
Hull 303, barge, International Cement Corp.; 162 ft long; keel Dec 2/24; launched Feb 2/25; delivered Apr 25.

No name, hull 304, diesel tanker; 480 ft. long; 9500 gro tons; 13,000 DWT; New York-Werks-poor engs, 3200 BHP.

Hull 305, dredge hull, United Dredging Co.; 170 ft long; keel Dec 24/24.

Hulls 306-7, carfloats, Reading Company; 250 feet long.

Hulls 308-11, carfloats, Reading Co., 200 ft long.

Hull 312, dredge hull, 140 ft long, for Bney-ous Co.

THE PUSEY & JONES CO. Wilmington, Del.

Purchasing Agent: James Bradford.
Hampton Roads, hull 1029, automobile and passenger, twin screw, double deck ferryboat, The Chesapeake Ferry Co., Norfolk Ferry Co., Norfolk, Va.; 197 LOA; 59 ft 8 in beam; 9 ft 3 in loaded draft; 14 mi speed; 2 comp. engs; 2 Gunboat boilers; keel Mar 2/25; launch June 15/25, est; deliver July 15/25, est.

SPEDDEN SHIPBUILDING CO., INC. Baltimore, Md.

Purchasing Agent: Wm. J. Collison.
No name, hull 261, steel hull ferry, Gloucester & Yorktown Ferry Co., Gloucester Point, Va.; 115 LBP; 44 beam; 12 loaded draft; 260 HP C. O. Fairbanks-Morse eng; deliver Aug 1/25, est.

STATEN ISLAND SHIPBUILDING COMPANY Staten Island, N. Y.

Purchasing Agent: R. C. Miller.
John A. Lynch, hull 753, ferryboat, City of New York; 151 ft long; launched Mar 26/25.

Henry Bruckner, hull 754, sister to above; keel Sept 2/24.

No name, hull 755, sister to above; keel Sept 2/24.

No name, hull 757, sister to above; keel Feb 18/25.

No name, hull 758, sister to above; keel Mar 27/25.

Albanv, hull 756, ferryboat, New York Central R. R.; 210 ft long; keel Dec 27/24; launched July 25/25, est.

SUN SHIPBUILDING COMPANY Chester, Penn.

Purchasing Agent: H. W. Scott.
Colorado, hull No. 83, towboat, International Petroleum Co., Toronto, Canada; 160 LBP; 44 beam; 3 loaded draft; 650 IHP; oil burning; keel Feb 15/25; launched May 23/25.

One derrick barge, for Andian National Corp., Ltd.; 70x30x6-2.

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FEDERAL SHIPBUILDING AND DRY DOCK COMPANY

SHIPBUILDERS-ENGINEERS-REPAIRERS

PLANT KEARNY, N. J.

SALES OFFICE 26 BEAVER ST., NEW YORK

Freights and Charters

May 25, 1925.

SINCE our last report, dated April 17, new crop barley and wheat has come into the market with three charters for barley at 33 - to 33 9 and for September wheat 35 -. At the moment, owing to the heavy May rains in California, the barley shippers are skeptical, as it is difficult to foresee the damage to the crop, but new crop bookings and charters should feel renewed activity within the next two weeks. The wheat crop is said to be late and charterers advise it is unsafe to charter for wheat prior to September 20 laydays.

Australian lumber rates remain at about \$14.50, with no great demand but with few vessels offering.

Japan remains in a bad slump with rates as low as \$6 per thousand feet on lumber. Shippers do not look for an improvement before the fall months.

Intercoastal lumber is paying \$14 at present from British Columbia and the American side, although there have been a few fixtures from British Columbia at \$13.50 for May-June.

The following fixtures have been reported for grain to the United Kingdom-Continent: British stmr. Ben —, barley, 33 9, Westrope & Co., Aug. loading; British stmr. Sithonia, barley, 33 -, Bunge Western Grain Corp., July; British stmr. Benmohr, wheat, 35 -, Bunge Western Grain Corp., Sept. option barley from San Francisco, same rate; British stmr. Benvorlich, grain, 35 -, Kerr Gifford & Co., Sept.

The following steamers are reported fixed for lumber to Australia by J. J. Moore & Co.: Norwegian m. s. Heina, three trips, \$15, May loading; Norwegian stmr. Storviken (lump sum), May; Norwegian stmr. Hardanger, May loading; British stmr. Bengloe, same; Norwegian m. s. Gisla, same; Japanese stmr. Kureha Maru, June, charterers not mentioned; Norwegian m. s. Hallfried, July loading, Balfour, Guthrie & Co., \$14.50.

Japanese stmr. Tasmania Maru is reported fixed with lumber from North Pacific to Japan, April loading, Douglas Fir Exploitation & Export Co., rate not mentioned.

The following steamers have been reported for lumber to the Atlantic seaboard: American stmr. J. A. Gordon, May loading, charterers and rate not mentioned; American stmr. Georgian, \$13.50, June loading, Chas. R. McCormick Co.; American m. s. Frank Lynch, June, H. R. McMillan Co., \$14; American stmr. Severance, June, charterers not mentioned; American stmr. Onondaga, Henry D. Davis Lumber Co., \$14; British stmr. Romera, May, charterers not mentioned; American stmr. Romagne, \$14.50, July loading, Krauss Bros. Lumber Co.

Norwegian stmr. Hallgyn is reported fixed for British Columbia to the United Kingdom with merchandise, rate not mentioned, by Wallen & Co.

The following steamers have been reported as taken on time charter: Norwegian stmr. Luise Nielsen, Pa-

cific trading, one year, 95 cents, by H. R. MacMillan; Japanese stmr. Ryoka Maru, delivery Japan, redelivery Australia, Apr. loading, American Trading Co.; British stmr. Wilston, delivery North Pacific, redelivery Australia, general merchandise, June loading, Union Steamship Co. of New Zealand; Norwegian stmr. Niels Nielsen, delivery Hampton Roads, six to nine months, 90 cents, May, H. R. MacMillan.

The following sales have been reported: American bktn. Fullerton, Associated Oil Co., to Capt. H. C. Monstad, Los Angeles; American stmr. Hawaiian, American Hawaiian S. S. Co., to Lloyd Brazillero, Rio de Janeiro; American stmr. Gedney, E. A. Sims, to California Alaska Corp., Los Angeles; American stmr. Patterson, \$10,000, U. S. Marshal, to Todd Dry Docks, Inc.; American m. s. Donna Lane, \$39,000, Scandinavian Bank, Seattle, to Utopian Fisheries.

American tanker Derbyline is reported fixed from California to North of Hatteras, 66 cents, May loading; American tanker Occidental, same; British tanker Lumina, California to United Kingdom or Continent, 50/-, refined, May; American tanker Atlantic Sun, San Pedro to North of Hatteras, 78 cents, clean oil, May-June loading; American tanker Sheandoah, same; American tanker Roanoke, same; American tanker W. L. Steed, California to North of Hatteras, 77½ cents, June; American tanker Galena, same; American tanker Republic, same; French tanker Myrian, California to United Kingdom, 40/-, May-June loading.

PAGE BROS., Brokers.

TEBO YACHT BASIN, TODD SHIPYARD CORP., Brooklyn, N. Y.

Purchasing Agent: J. Flynn.
Murray Hulbert, hull 32, ferryboat, Dept. of Plant Structure, City of New York; 148 LHP; 53 ft beam over guards, 37 ft 6 in beam molded; 9 ft 9 in loaded draft; 11 knots loaded speed; 508 gross tons; comp engs; 2 HKW boilers, 1102 sq ft heating surface; keel Sept 24/24; launched Dec 7/24; deliver Jan 25, est.
Edward Regelman, hull 33, ferryboat, City of N. Y., sister to above, keel Sept 24/24; launched Dec 7/24; deliver June 25, est.

Julius Miller, hull No. 34, ferryboat, City of N. Y., sister to above, keel Sept 24/24; launched Jan 27/25; deliver July 25, est.

Marion Corbally, hull No. 35, ferryboat, City of N. Y., sister to above, keel Feb 19/25; launched Apr 23/25; deliver July 25, est.

No name, hull No. 36, ferryboat, City of N. Y., sister to above, keel Feb 19/25; launch June 14/25, est; deliver Aug 25, est.

THE CHARLES WARD ENGINEERING WORKS Charleston, W. Va.

Purchasing Agent: E. T. Jones.
Lockport, hull 33, towboat, U. S. Engineers, Navy, Tenn., 116 ft long, 29 ft beam; 5-6 HP; 2 surface condensing tandem comp engs, 1102 sq ft heating surface; coal burning; installed keel Apr 17/24; launched Apr 15/25.
No name, hull 37, tug and propeller towboat, Navy, Tenn., 126 LHP; 24 beam; 1102 sq ft heating surface; 36 HP each.

Repairs

BETHLEHEM SHIPBUILDING CORP., LTD., San Francisco,

Potrero Works

Drydock, clean, paint, misc. repairs: H. T. Harper, Panama, Gold, West Virginia, F. H. Hillman, Standard Service, J. A. Moffett. Drydock for survey, also engine, boiler, hull and steward's dept repairs: Mount Carroll. Docked for survey: Sugarcree, Renew boiler tubes: Eskine M. Phelps. Drydock, engine, boiler, hull repairs: Tamalpais (also tailshaft drawn), Wm. F. Heron, San Francisco. Engine, boiler, hull repairs: Wainona, Wainona. Engine, boiler, hull repairs: McKittick, Wilhelmina, Linnua, Chiapas, Frank G. Drum, Sylvan Arrow. Install bow rudder and contrabow propeller: Calstoga. Conversion to motorship: Loo. Engine repairs: Newport. Pipe repairs: La Placencia, Alm. Dewey, La Purissima. Install towing engine, also engine, boiler, hull repairs: Maui. Hull repairs: Texan, Eldorado. Misc. El Segundo, D. G. Seafeld, Java Arrow, Charlie Watson, Tacoma, Rose City, Martinez, S. O. Launch Dispatch No. 4, Meville Dollar, Felix Taussig, Makana, K. R. Kingsbury, Lurline, Noyo, Capt. V. E. Lucas, Los Mamos, W. S. Miller, Missourian, Eagle, Indiana, Caspar, Paul Shoup, Ventura, Ohioan, Montreal Maru, D. G. Seafeld, Columbia.

San Pedro Works

Drydock and repairs: stmr. John D. Archbold, Geo. H. Jones, Halo, R. J. Hanna, Olcum; stmr. Samoa, Halco, Shell Oil Barge No. 4. Misc. repairs: stmr. Standard Arrow, San Melito, Meter, Stuart Dollar, Montpelier, Santa Maria, Newport, Royal Arrow, Watertown, Santiam, Java Arrow, La Purissima, Salina, Leche, Missourian, Arman, Lewis Luckenbach, Arid, Wilcox, Big Pilot, schr. M. F. Scanlon, m. s. Los Alamos, dredge San Francisco.

THE COLLINGWOOD SHIPBUILDING COMPANY, LTD., Collingwood, Ontario

Purchasing Agent: E. Podmore.

Inspection of hull and machinery: Scranton. Bottom damage repairs, tailshaft inspection, etc.: Agawa, Glenhman, Bilge damage repairs: Midland Prince. Rudder repairs: Monitour. Four new blades fitted: Michipicoten.

PUGET SOUND NAVY YARD, Bremerton, Wash.

Misc. repairs and docking: Maryland, Moody. Misc. repairs: Colorado, New Mexico, Sinclair, Kennedy, Eagle No. 38 and No. 57. Misc. repairs incidental to operation as district craft: Tatnuck, Swallow, Troquois, Pawtucket, Sotoyomo.

TODD DRY DOCKS, INC., Seattle, Wash.

General overhauling: whalers Anadyr, Bering and Diomed. Survey and general repairs: U. S. S. Newport News, stmr. Kommandoren I. Misc. repairs: stmr. Cebu, Crenus, Indianapolis, Cross Keys, Colusa, Onego, Toyama Maru, Charles McCormick, Hanley, H. F. Alexander, Dorothy Alexander.

VICTORIA MACHINERY DEPOT COMPANY, Victoria, B. C.

Purchasing Agent: H. S. Hammill.

Dock, clean, paint, overhaul for season: whalers Orion, St. Lawrence, Black, White, Brown, Green, Gray. Dock, clean, paint: Salvage King, C. G. stmr. Armentieres (also hull repairs), Island Princess (also hull and engine repairs). Engine repairs: stmr. Famous.

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

WE note with interest that Edward S. Hough and Edward B. Egbert have formed an association under the name of Hough & Egbert, Inc., consulting engineers and marine surveyors, with offices in the Robert Dollar building, 311 California street, San Francisco.

The new firm represents the Bureau Veritas International Register of Shipping and Walter Kidde & Company of New York, manufacturers of the Rich smoke detecting system and the Lux fire extinguishing system. They will also handle the Hough patent boiler feed check valves in addition to their business as consulting engineers and marine surveyors.

NORTHERN TOUR

Harry Pinkham, manager of the marine department of J. B. F. Davis, and Ed. Barry of Parrott & Company, San Francisco, recently completed annual trips throughout the Pacific Northwest territory, covering the field from Portland to Vancouver.

PACIFIC STEAMSHIP OPENS L. A. OFFICE

To meet increasing business in the Southern California territory, the Pacific Steamship Company on June 1 opened a new passenger office in Los Angeles. The new office is at Fifth and Olive streets opposite the Biltmore Hotel. E. Grant McMicken, passenger traffic manager of the Pacific Steamship Company, personally supervised the equipment and arrangement of office. The other Los Angeles passenger office at 501 South Spring street will continue operation. Both offices will be supervised by Rube Schutten, district passenger agent in the southern field.

William McStay, genial and widely known promotion expert, is making a tour of the Pacific Steamship Company's ticket offices, in the capacity of traveling passenger agent.

GEORGE J. ROBINSON

Todd Shipyards Corporation announces the retirement of George J. Robinson, president of the Robins Dry Dock & Repair Company, from active duty on account of ill health. The Robins plant is a subsidiary of the Todd Shipyards Corporation. Mr. Robinson has been actively associated with William H. Todd, president of the corporation, for the past thirty years and is one of the best known ship repair experts in America. During his career he rose from passer boy to be president of the yard. Mr. Todd, himself, retired as president of this company and became chairman of the board of the Todd Shipyards Corporation in order to permit Mr. Robinson to become president, an ambition he had shared with Mr. Todd when both wore overalls and worked side by side. In fact, "Robins", or "Erie Basin", as the yard is known to shipmasters all over the world, is synonymous with Billy Todd and George Robinson, two ship repair men who were inseparable pals and who shared the hard knocks of earlier years as well as the prosperity with which their efforts were rewarded in later life. Ill health forced Mr. Robinson to take a long rest a year ago. He resumed his duties a few months ago, but now, at the earnest solicitation of friends and advisors, he has decided to retire permanently. Mr. Todd expressed his deep regret that illness had compelled his old friend and associate to relinquish his duties in the active management of the plant. Mr. Robinson will remain a director in Todd Shipyards Corporation.

MONSON RESIGNS

Fletcher Monson, secretary of the Hanlon Drydock & Shipbuilding Company, Oakland, has resigned after six years' service with that firm. Monson joined the firm under the late Dan Hanlon and prior to that was connected with the Barnes & Tibbitts shipyards.

G. HAROLD PORTER

G. Harold Porter, head of the marine department of the Radio Corporation of America, New York City, has succeeded Arthur A. Isbell as manager of the Pacific division of the company with headquarters in San Francisco. Mr. Isbell is now assistant traffic manager of the organization, stationed at New York. In regard to Mr. Isbell's transfer, George Street, San Francisco manager, said: "Mr. Isbell has been identified with the Radio Corporation since its infancy and is widely known among the radio fraternity throughout the Pacific Coast territory. It was he and L. A. Malarin, a former official with the firm at San Francisco, who participated many many years ago in the first successful transmission of radio signals from the Hawaiian Islands to San Francisco."

SOUTHERN PACIFIC

William Simmons, traffic manager of the Southern Pacific Steamship Lines, New York City, announces that W. L. Trammell has been appointed general freight agent, with offices at 165 Broadway, New York City.

JOHNSON LINE

The new combination passenger and cargo ships, embodying the latest equipment afloat, soon will be placed in service by the Johnson Line of Gothenburg between Scandinavian, Central and South American ports, San Diego, Los Angeles, and San Francisco. These two new motorships are the Axel Johnson and Annie Johnson, now building at Gothenburg. They will be ready for service in October. Each will have accommodations for thirty first-class and thirty second-class passengers and will carry 5000 tons of cargo. Each will have facility for handling 1000 tons of refrigerated cargo.

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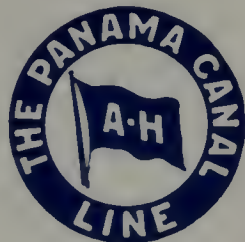
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215 Market street. Phone Douglas 9560.
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SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY
SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.
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Regular sailings between San Francisco, Seattle, Vancouver, B. C., Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corp., agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.
SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.
SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.
SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.
FREIGHT ONLY.
SAILINGS—North Atlantic - Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.
SAILINGS—Gulf.
Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Garfield 5000.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland,

Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.
SAILINGS—Passengers and Freight.
Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York, Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.
SAILINGS—Direct Freight Service.
Every 14 days. Eastward calls: San Francisco, Los Angeles. Westward: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
430 Sansome street. Phone Kearny 2600.
FREIGHT ONLY.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger Offices: 460 Market street. Phone Douglas 8680.
Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.
SAILINGS—Intercoastal.
Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,
311 California street. Phone Garfield 6760.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.
FREIGHT ONLY.
SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
F. C. Bennett, Pacific Coast manager.
110 California street. Phone Douglas 1670.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.
Mutual Life Bldg. Phone Eliot 8120.
FREIGHT ONLY.
SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.
SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SHARPLES PROGRESS

THE Sharples Specialty Company of Philadelphia announces that a new Pacific Coast office has been opened at 688 Howard street, San Francisco, under the name of The Sharples Specialty Company of California. L. A. Taylor, who is well known among the Pacific Coast industrial and marine circles, especially for his wide experience with the applications of Sharples super centrifugal force, will be in charge of the San Francisco and Pacific Coast territory. The other Sharples offices are located as follows: Boston, New York, Pittsburgh, Chicago, Tulsa, New Orleans, Los Angeles, and 2300 Westmoreland street, Philadelphia. Foreign offices are: Super Centrifugal Engineers, Ltd., Imperial House, Kingsway, London, W. C. 2, England; Ste. Ame des Appareils Centrifuge, 8 Rue du Helder, Paris; Tatsumi Commercial Corporation, Marine Insurance building, Tokio, Japan.

EUREKA SERVICE

A certificate has been granted by the California State Railroad Commission to the Cousins Launch & Lighter Company to operate freight vessels between Eureka and points on Humboldt Bay, including Sonoma, Little River Wharf, Rolph, Arcata, Fields Landing, and Ships Anchorage.

HARKNESS NEW SITE

The Harkness Transportation Company, operating a steamer service between Astoria and Portland, is now occupying a part of the Sanborn Dock Company's property at Astoria. The Harkness interests have leased 400 feet of berthage and two large warehouses from the Sanborn company. Previously the Harkness line operated from the O-W R. & N. dock. Its removal from that point enlarges the terminal facilities of the McCormick Steamship Company.



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S. S. SANTA PAULA—Sails JUNE 4
S. S. SANTA OLIVIA—Sails JUNE 18

From New York to Los Angeles, San Francisco, Portland and Seattle

S. S. SANTA BARBARA—Sails JUNE 24
S. S. SANTA PAULA—Sails JULY 8

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DOLLAR STEAMSHIP LINE

Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf.

Every 19 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

Lobby 4 Central. Phone Elliott 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Passenger Office, 619 Second avenue.

Pacific Steamship Company, agents.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—Intercoastal.

Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

M. O. Beggs, Agent.

4421 White Building. Phone Elliott 6127.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.

Arctic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

Spokane street terminal. Phone Elliott 6657.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Sailings between Los Angeles, San Francisco, Seattle, Vancouver, B. C., New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.

541 South Spring street.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street. Phone Main 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf Service.

Every 19 days from Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone Metropolitan 6140.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.

Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

SAILINGS—Direct Freight Service.

Every 14 days. Eastward calls: San Francisco, Los Angeles. Westbound: New York, Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Portland and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone Vandyke 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.

Freight Offices: Pacific Steamship Company.

T. H. JACOBS

When the world-cruise liner Resolute of the United American Lines visits San Francisco on February 3, next year, for a six-day stay, Thos. H. Jacobs, Pacific Coast passenger manager, is to entertain an army of school children for a stem-to-stern inspection of the famous vessel. Mr. Jacobs will arrange guides to conduct the youngsters over the ship and estimates that 3000 per hour will take care of the juvenile population. The Resolute is the first vessel to make a double round-the-world cruise since the company's liner Cleveland was in San Francisco before the World War. The liner will sail westward from this port, taking the same course covered on the eastbound cruise from New York.

CAPTAIN OLSEN DEAD

Captain William Olsen was buried May 21 at Mount Olivet cemetery in San Francisco, Captain "Bill" Olsen, as he was known to the marine fraternity of San Francisco, was stricken in Los Angeles and removed to San Francisco. He was 57 years old and is survived by a daughter. For thirty years he was employed by shipping houses about the bay. His last position was as captain with the Shipowners & Merchants Tugboat Company, serving that firm for years.

LUMBER STORAGE

A new lumber storage base is to be established at the Tidewater Terminal, Philadelphia, and is expected to be ready for operation in two months. The project was discussed at a conference between Harvey C. Miller, president of the terminal company; Captain Asa F. Davison, vice-president of the Fleet Corporation in charge of operation, and R. H. Overstreet, in charge of the terminal division of the corporation. It is proposed to take three miles of railroad track from the Hog Island shipyard for use in the new terminal. Railroads entering Philadelphia have promised cooperation in the project.

C. G. M. M. DEFICIT

Lynn W. Meekins, American trade commissioner at Ottawa, Canada, reports that the Canadian Government Merchant Marine had an operating deficit of \$1,440,880 for 1924, and an aggregate loss of over \$35,000,000 since its inception. The 1924 deficit, however, was \$434,412 less than in 1923.

LOS ANGELES

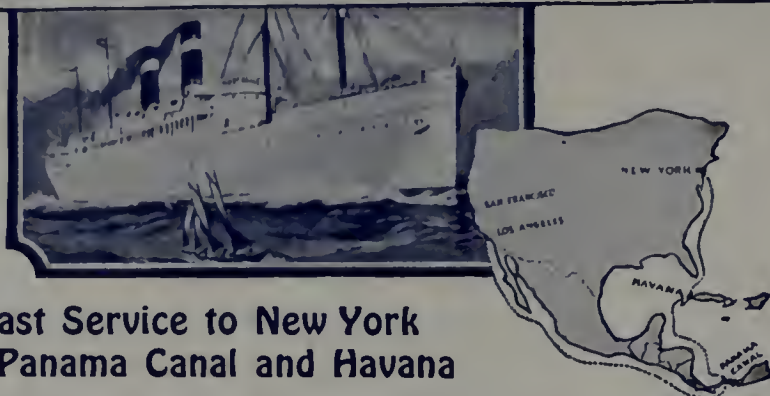
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F. A. Hooper, agent.

Transportation Bldg. Phone 821-336.

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New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, Tacoma

WESTBOUND

From New York, Pier 61, N. River

MONGOLIA	June 11
FINLAND	June 25
MANCHURIA	July 16
MONGOLIA	July 30

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.

KROONLAND	June 13	June 15
MONGOLIA	July 4	July 6
FINLAND	July 18	July 20
MANCHURIA	Aug. 8	Aug. 10

Direct connections at New York and thru Bills of lading issued via: American Line to HAMBURG. Red Star Line to ANTWERP.
Atlantic Transport Line to LONDON. White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

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619 Second Ave.

LOS ANGELES
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322 Citizens National Bank.
Passenger Offices: 510 So. Spring st. Phone
TR 6408.

SAILINGS—Intercoastal.

Regular intervals between New York and
San Diego, Los Angeles, San Francisco,
Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
A. G. Bartlett Bldg. Phone Broadway 2580-
2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los An-
geles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Bal-
timore, Savannah and Los Angeles, San
Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma,
San Francisco, Oakland, Los Angeles, San
Diego, and New York, Philadelphia, Nor-
folk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
Railway Exchange Bldg. Phone Broadway 2744.

SAILINGS—Weekly from Seattle, Tacoma, Por-
tland, Astoria, Oakland, San Francisco,
Los Angeles to New York, Philadelphia
and Boston.

SAILINGS—Every 21 days from Portland,
Astoria, Seattle, Tacoma, Oakland, San
Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancou-
ver, Seattle, Portland, San Francisco, Los
Angeles and New York, Providence, Phil-
adelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver,
Seattle, San Francisco, Los Angeles, San
Diego and New York, Boston, Providence,
Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San
Diego and Los Angeles; also monthly di-
rect to Hawaii from Philadelphia, New
York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle,
Tacoma, Portland, Astoria, San Francisco,
Oakland and Los Angeles to Philadelphia,
New York and Boston.

SAILINGS—Gulf Service.

Every 19 days from Vancouver, Seattle,
Tacoma, Portland, Astoria, San Francisco,
Oakland and Los Angeles to Galveston,
New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston
and Baltimore (westbound) and Los An-
geles, San Francisco, Oakland, Portland,
Seattle and Tacoma; monthly to Jackson-
ville, Fla.

PACIFIC MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.

Yeon Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 14 days. Eastward calls: San Fran-
cisco, Los Angeles. Westbound: New

York, Philadelphia, Baltimore, Norfolk,
Los Angeles, San Francisco, Portland,
and Seattle.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
1008 Spalding Bldg. Phone Broadway 2503.
FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget
Sound, Portland and Columbia River, San
Francisco, and Los Angeles to New Or-
leans, Mobile and Caribbean Sea and Gulf
of Mexico ports as inducements offer, via
Panama Canal.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.
Admiral Line Terminal.

SAILINGS—Regular intervals between New
York and San Diego, Los Angeles, San
Francisco, Oakland, Portland, Seattle and
Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Bal-
timore, Savannah and Los Angeles, San
Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle,
Portland, San Francisco, Los Angeles and
New York, Boston, Providence, Philadel-
phia, Baltimore and Portland, Me.

CANADIAN GOVERNMENT MER- CHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to
Montreal. Through bills of lading from
other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.
402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C.,
Seattle, San Francisco, Los Angeles, New
York, Boston, Baltimore, Philadelphia, Nor-
folk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver,
Seattle, San Francisco, Los Angeles, San
Diego and New York, Boston, Providence,
Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San
Diego and Los Angeles; also monthly di-
rect to Hawaii from Philadelphia, New
York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.
Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Ta-
coma, Portland, Astoria, San Francisco,
Oakland, and Los Angeles to Philadelphia,
New York and Boston.

SAILINGS—Gulf.

Every 19 days from Vancouver, Seattle,
Tacoma, Portland, Astoria, San Francisco,
Oakland, and Los Angeles to Galveston,
New Orleans, and Mobile.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports.
San Francisco, Los Angeles to New Or-
leans, Mobile and Caribbean Sea and Gulf
of Mexico ports.

PASSENGER TRAFFIC

Representatives of San Francisco
steamer lines recently conferred on
plans to develop overseas travel. A
permanent committee was organized
under the chairmanship of W. H.
Sellander, general passenger agent
of the Matson Navigation Company,
to cooperate with the San Francisco
Chamber of Commerce. The com-
mittee will strive for development
of passenger traffic in and out of
the port and will take up matters
such as dockage, quarantine, and
customs. Those attending the ini-
tial conference were: Harry Brandt,
general agent, United States Lines;
P. J. Groenendaal, Pacific Coast pas-
senger agent, Holland-America Line;
A. F. Gitterman, passenger agent,
North German Lloyd; J. B. Hub-
bard, district passenger agent, Amer-
ican Express Company; L. de Leeuw,
district agent, French Line; Fred
L. Nason, general agent, Canadian
Pacific Railway; Arthur Paulson,
passenger agent, Matson Navigation
Company; Walter H. Ramage, assist-
ant general passenger agent, Ocean-
ic Steamship Company; Ernest F.
Rixon, passenger agent, Thos. Cook
& Son; O. E. Scheerer, general pas-
senger agent, Union Steamship Com-
pany of New Zealand, Ltd.; W. H.
Sellander, general passenger agent,
Matson Navigation Company, and
Edmund J. Zappettini, general agent
on the Pacific Coast for Italian Lines.

LUCKENBACH SCHEDULE

Luckenbach Steamship Line has
issued a novel sailing schedule, pat-
terned after a railroad time-table,
the name of the line's vessels being
at the head of the column, corre-
sponding to train numbers on time-
tables. Ports of call are arranged
below, giving the time of the ves-
sel's arrival and departure, the same
as railroads show for the stations
en route. Luckenbach's punctual
sailings enable the publication of
such a guide. If evidence of this
fact were necessary it could easily
be found in study of last year's ar-
rivals at San Francisco from New
York by steamers of the Luckenbach
Line. Of 52 weekly sailings two
steamers arrived three days ahead
of schedule, two of them two days
ahead of schedule, seventeen one
day ahead of schedule, and thirty-
one on time, no steamer being late.
This is "going some" when it is con-
sidered that a steamer has to travel
a distance of 5262 nautical miles, or
6059 statute miles, en route from
New York to San Francisco, and
besides is liable to delay in passage
of the Panama Canal as well as mak-
ing a call at Los Angeles harbor.

NORTON, LILLY & COMPANY

GENERAL AGENTS, PACIFIC COAST

ISTHMIAN STEAMSHIP LINES (Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transhipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR

(Pacific-Mediterranean Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

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NORTON, LILLY & COMPANY, Agents, Portland, Seattle, Los Angeles and San Diego

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IN FOG—BLOW FOUR WHISTLES
WHEN CLEAR—BURN BLUE LIGHT OR JACK AT FOREMAST

ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels.)
112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Weekly from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.
Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels.)
Sudden & Christenson, agents.
230 California street. Phone Garfield 2846.
FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning via San Francisco.

OSAKA SHOSEN KAISHA

Williams, Dimond & Co., Agents.
310 Sanson St. Phone Sutter 7400.

SAILINGS—San Francisco Service (**FREIGHT ONLY**).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (**PASSENGERS AND FREIGHT**).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
549-51 Market street. Phone Sutter 3900.
PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
222 Robert Dollar Bldg. Phone Garfield 3899.
FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.
City ticket office: 1300 Fourth Ave.
General offices: 1519 R. K. Ave. So.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.
Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
American Bank Building. Phone Elliott 1450.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

Pier 6.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

NEW PACIFIC COASTAL LINE

Captain John F. Blain, who recently purchased the steamer Newport News from the government, has announced the intention of placing the vessel, with another, on the run between San Francisco and Seattle, carrying passengers and freight. Until recently Captain Blain was operating manager for the Dollar Steamship Company.

PORT CAPTAIN FOR LUCKENBACH

Captain H. V. Van Dusen, until recently port captain for the Luckenbach Steamship Company at Seattle, has been appointed port captain for the company at San Francisco, a position just created. Captain Van Dusen has organized a stevedoring department at San Francisco similar to the one functioning at Seattle. Captain E. F. Murphy, senior chief officer of the line, who has been chief officer of the steamer Lewis Luckenbach, succeeds Captain Van Dusen as port captain at Seattle.

ROLPH AGENT AT ASTORIA

The Columbia Navigation Company, a subsidiary of the Astoria Flouring Mills Company, has been named Astoria agent for the Rolph Line coastwise service, recently inaugurated. The office is at the Port of Astoria terminals. L. C. McLeod, manager of the milling firm, will manage the agency.

ATLAS DIESEL

S. R. Wallace Shipyard, North Vancouver, British Columbia, has an order from the West Vancouver Municipal Ferry Company for a ferryboat of wooden construction. The boat will be 107 feet long, and 18 feet beam, and will be equipped with a 200-horsepower Atlas-Imperial diesel engine.

RECONDITIONING

Preparing for a June 20 departure, the steamer City of Los Angeles of the Los Angeles Steamship Company's California-Hawaiian line, is undergoing redecorating from stem to stern. The Los Angeles Chamber of Commerce excursion is scheduled for June 20, the sixth tour conducted by that active body.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yoko-

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SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

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SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

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KAISHA

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FREIGHT ONLY.

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BOOK REVIEWS

Screw Propellers, by Rear-Admiral Charles W. Dyson, U. S. N. Two volumes containing 508 pages, numerous illustrations, plates, diagrams, and tables; bound in red buckram with gold stampings; published by the Simmons-Boardman Publishing Company, New York. Price, \$15 for the two volumes (not sold separately).

Dedicated to the Cadet Engineers of the United States Navy by the last one of them remaining on active duty.

This is the third edition of the standard American work on propeller design. In fact, the name of Dyson has become so thoroughly identified with the design of refined propellers for fast merchant and navy vessels that many manufacturers seek to extol their products by retaining the services of Rear-Admiral Dyson or some of his pupils in a consulting capacity.

According to the author's preface, many years ago an eminent engineer looking into the mouth of the "black cavern which held a mine of wealth in the form of propeller knowledge, said: 'Any man can design a good propeller, but it takes an exceptionally fine engineer to design a bad one.'"

Years later another engineer, posing as an expert designer of propellers, said that he could tell the proper diameter and pitch of "propeller to use on any given vessel by looking at the vessel in drydock."

The writer of the book claims that he entered the portals of the black cavern above mentioned, leaving all means of illumination behind, and that stumbling along through the darkness, he as from time to time picked up nuggets and minted them in the form of books, the first of which appeared in 1913, the second in 1918, and now this final edition. Since many of these nuggets have turned out to be "fool's gold" this final edition has required almost complete rewriting, and is practically a new book. Much more attention has been given to variations in hull form, and to the peculiar effect of each type on propeller performance.

KEHOE VISITING PACIFIC COAST

Herbert J. Kehoe, general agent of the American-Hawaiian Steamship Company at New York, is making a tour of inspection of Pacific Coast ports, accompanying John E. Cushing home to San Francisco. Kehoe will visit the American-Hawaiian agencies in the western range.

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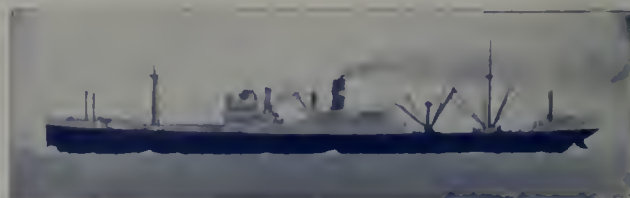
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JOHNSON LINE

W. R. Grace & Co., general agents.
332 Pine street. Phone Sutter 3700.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenburg, Malmo, Copenhagen, Stockholm and Helsingfors.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)
120 Market street. Phone Douglas 7510.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

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485 California street. Phone Sutter 5099.

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Colman Building. Phone Elliott 5706.

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Fortnightly from Vancouver and Los Angeles to United Kingdom.

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SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

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Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

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SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenburg, Malmo, Copenhagen, Stockholm and Helsingfors.

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SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

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Norton, Lilly & Company, general agents.

BOOK REVIEWS

Wooden Ships and Iron Men, by Frederick William Wallace. 350 pages, 37 illustrations, bound in blue buckram with gold stampings; published by George Sully & Company, New York.

Frederick William Wallace needs no introduction to lovers of the sea and of sea tales. His stories of Canadian trawlers and of seamen and fisher folk of Nova Scotia, New Brunswick, Newfoundland have endeared themselves to the hearts of many readers.

Like the United States, Canada had her glorious days of the sailing ship. In fact, Canada gave to the United States two shipbuilders who might be very well named fathers of the shipbuilding that made America famous. The first of these, Henry Eckford, a Scotchman who migrated to Canada and learned the shipbuilding trade there in the yard of his uncle, John Black of Quebec, moved to New York in 1796 and became "the founder of that school in naval architecture which was recognized in the middle of the Nineteenth Century as thoroughly American and from the teachings of which all of our shipbuilders have so abundantly profited." It was this Eckford who built and launched John Jacob Astor's famous ship, the Beaver, in 1803. He built many of the famous privateers and warships of the War of 1812. The great New York shipbuilder Isaac Webb was one of his apprentices.

The other immortal of the adze and chisel referred to in "Wooden Ships and Iron Men" as having been given by Canada to the United States was the great Donald McKay himself, a Nova Scotian by birth, who learned his trade in the shipyards of that province.

In this book, as in all of Wallace's writings, it is easy to find the tang of the sea, much trustworthy information, and a great deal of stirring incident. While it is true as John Masfield sings, that these ships "mark our passage as a race of men; Earth will not see such ships as those again," still in such books as "Wooden Ships and Iron Men" many a land-locked potential mariner can feel the stirrings of the Viking urge and, sitting by the winter fire, can get the thrill of beating 'round the Horn in the Roaring Forties, or running his "eastward down" before the Northwest Trades and the great surges of the South Pacific.



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"Hawaii 'shows off' in the summer," writes William Cogswell in "The Arrowhead." "All Nature bursts forth in an enthusiastic glory. . . The *malihini*, or newcomer, is impressed with the great outburst of color at this time of year, as the native Hawaiian flowering trees and shrubs appear in full bloom. . . When a whole tree breaks into flower, the blossoms outrivaling anything of color in the vicinity, and presenting a delicacy enjoyed by flowers of much more minute proportions, the sight is as unusual as it is beautiful.

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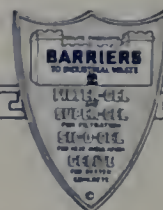
SIL-O-CEL C-22 Insulating Brick provide for thorough insulation of hottest walls, even where temperatures behind the refractory may reach 2000 degrees Fahrenheit. They are of standard firebrick dimensions and can easily be incorporated in the wall construction.

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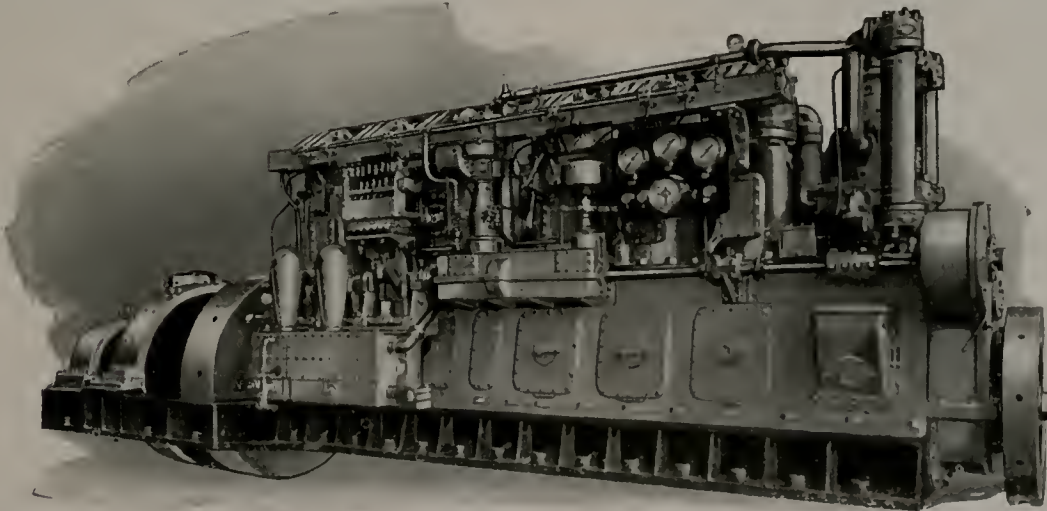
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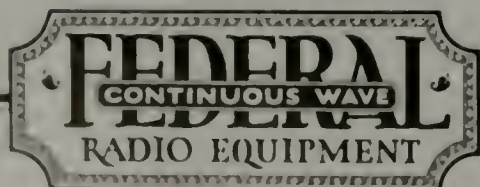


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PANAMA AND SUEZ TRAFFIC

An exact comparison of traffic statistics between the Panama and the Suez Canal is difficult, since not only do the measurement rules of the two canals differ, but also there is considerable difference in the classification of traffic. Speaking in general terms, however, the volume of traffic passing through the two canals at the present time is approximately equal.

The Suez Bulletin for January 25, 1925, contains a recapitulation of traffic through the Suez Canal for the past three calendar years, and a comparison of the figures quoted therein with similar figures for Panama Canal Traffic, shows the following:

	Number of transits	Net tonnage	Gross tonnage	Tons of cargo
Calendar year 1922:				
Suez Canal	4,345	20,743,245	28,610,922	21,361,000
Panama Canal	2,997	12,992,573	16,315,147	13,710,556
Calendar year 1923:				
Suez Canal	4,621	22,730,162	31,329,236	22,777,000
Panama Canal	5,037	24,737,437	31,658,095	25,160,545
Calendar year 1924:				
Suez Canal	5,122	25,109,921	34,651,912	25,529,000
Panama Canal	4,893	24,411,760	31,127,724	25,892,134

In the Suez traffic statistics, barges and miscellaneous craft of less than 300 tons measurement are omitted from the traffic statistics, while the Panama Canal traffic statistics include such vessels if over 20 tons measurement. In the Suez statistics are included a considerable number of naval vessels; while in the Panama statistics, transits of United States naval vessels, army transports, and other public vessels of the United States (which numbered 403 transits in 1924) are omitted.

(Panama Canal Record)

BACKING UP THE SALES AGENT

SOME time ago, at the suggestion of the American commercial attache at Tokyo, a message appeared in Commerce Reports that it would be advantageous to American exporters having sales representatives in Japan to report the names and addresses of such agents so that they could be registered in the Tokyo office of the bureau. Quite a response to the suggestion resulted and the data were sent to Tokyo.

Acting Commercial Attache Babbitt of Tokyo has just advised that, as a result of these registrations, one American manufacturer, through his Japanese sales agents, received an order from the Imperial Japanese government of considerable importance, the agents' certificate as a special representative issued by the Tokyo office of the bureau playing a considerable part in the transaction. The suggestion is still pertinent.

PILING TESTS

For the purpose of determining the type of piling to be used in future construction work in Los Angeles Harbor, a comprehensive comparative pile test is contemplated, covering tests for durability, supporting friction, permeability and strength. This test will include creosoted piles, poured concrete piles, ducrete piles, gunite piles, and possibly other forms of patented piling and will be conducted in the laboratory of the Harbor Department under the inspection of all parties interested, as well as representatives of the leading technical societies and of the California Institute of Technology. A conference has already been held to determine the final specifications under which the different parties interested will furnish samples.

WAREHOUSING AT PANAMA CANAL

AN official order dated March 17, 1925, gives notice that beginning April 1, 1925, the Panama Railroad Company will warehouse nonperishable and nondangerous merchandise "for orders" at its piers and warehouses at Cristobal and Balboa. The conditions to which this warehousing is subject are here summarized for the convenience of our readers:

1. The warehouseman is simply a bailee and does not insure goods. Depositors will have access only for purposes of inspection.

2. Warehouseman assumes no responsibility for loss, deterioration, or pilferage.

3. Unless special conditions are agreed upon, goods will be stored at the discretion of the warehouseman and be given ordinary storage and care.

4. Charges will be as per published tariff on a month-to-month basis. A lien upon the goods must be given to cover charges of any nature. After three months, warehouseman is authorized without giving notice to sell goods to cover accrued charges.

5. Perishable and hazardous goods are received at depositor's risk.

6. Delivery of goods from warehouse will be made only upon written order from signee of warehouse receipt or his agent.

7. Liability of the warehouseman in any event is limited to \$8 per cubic foot or 25 cents per pound.

The tariff charges beginning April 1 are in three distinct classes:

(a) Charge for handling from ship's side to storage place, \$1 per ton on general merchandise and one-half of the present transfer rates on other commodities, as shown by Tariff No. 7.

(b) Charge for delivering or replacing cargo is the same as (a).

(c) Storage charge of 3 cents per ton per day for all time in excess of 35 days, no storage charge being made for the first 35 days.

Charge for receiving cargo is against delivering vessel. Charge for delivering cargo is against the receiving vessel; or, if through the local freight house, against the owner or consignee and collectable before delivery. Charge for storage is against owner of cargo and collectable monthly.

INCREASE IN GERMAN SHIPPING THROUGH CANAL

During the calendar year 1924, there were 165 transits of vessels of German registry through the Panama Canal, with a combined Panama Canal net tonnage of 728,347, on which tolls of \$666,450.09 were paid.

German shipping through the Canal has grown rapidly during the past four years as may be seen by the following tabulation:

Calendar year	No. of transits	Panama Canal net tonnage	Tolls	Tons of cargo
1921	13	30,905	\$30,870.85	30,951
1922	62	219,018	211,240.37	222,898
1923	124	508,703	464,982.68	523,100
1924	165	728,347	666,450.09	847,039

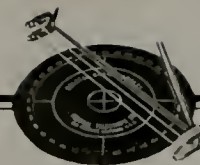
In order of importance as to number of transits and volume of tonnage, German shipping through the Canal ranked thirteenth in 1921, sixth in 1922, fifth in 1923, and fourth in 1924.

At present, the greater part of the German shipping through the Canal is handled by three lines, viz., the Hamburg-American, the Roland Line, and the Kosmos Line. The principal trade routes covered by German vessels are between Europe and the west coast of North and South America, the South American trade predominating at the present time.

(Panama Canal Record)

The greatest aid

to Navigation



Admiral Line Steamer H. F. ALEXANDER

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—with safety — without delay! Fog conditions at harbor entrances mean no delay—no loss of time—to the vessel equipped to take radio bearings with a Kolster Radio Compass.

Despite the weather, fog, snow or a stiff sou'wester—the radio wave pierces through. With the Kolster Radio Compass, the master can take direct bearings of radio fog signaling stations established by the United States Bureau of Lighthouses and guide his ship to safety and without delay.

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There's Super-Strength in Colombian



This actual photograph tells the story of the real strength that all Colombian *Tape-Marked* Pure Manila Rope possesses. It shows one of the mooring bitts pulled out of the deck of the *S. S. Mars*, an ore carrier, caught in a southerly storm while moored.

The storm resolved itself into a hurricane of such violence that the *Mars* was driven onto the rocks, despite the fact that she was made fast to 12 mooring buoys and had out 2 anchors, each weighing 9,800 pounds.

Steel cables used in mooring proved worthless and parted early in the storm. Every Colombian *Tape-Marked* line held, even pulling the strong, massive steel bitts from the vessel's deck. This incident again proves the superiority of a Manila line, especially Colombian, over a wire line for mooring.

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COLUMBIAN TAPE-MARKED ROPE

Pacific Marine Review

The National Magazine of Shipping

JULY, 1925

TWENTY-FIVE YEARS AGO

June 16, 1900

This advertisement in the *New York Journal of Commerce* announced the first steamer service between the Coasts via Magellan

DIRECT STEAMER SERVICE TO
San Francisco
and Honolulu.
**AMERICAN-HAWAIIAN
STEAMSHIP CO.**

The full-powered high-class steamers now being constructed in American yards specially for this service are intended to be dispatched as follows:

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S.S. HAWAIIAN8,500 Tons.....	Oct. 1
S.S. CALIFORNIAN8,500 Tons.....	Nov. —
S.S. OREGONIAN8,500 Tons.....	Jan. —

Freight received after June 15 at Company's New Covered Pier, 42d St., South Brooklyn. For rates of freight and further particulars apply to

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General Agents.

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American-Hawaiian Steamship Company

THE PANAMA CANAL LINE

General Offices: 215 Market St., San Francisco, California



"I'll be bound"

THOUSANDS of copies of "Oxy-Acetylene Tips" can say this. This monthly magazine is saved and it is bound because the first number (August, 1922) is just as valuable for reference today as when it was published.

"Tips" is valued by every man from the president to the welder. It tells how to improve the work now being done. It suggests new welding and cutting operations. It points out economies. It is saved and bound because it aids in solving many problems.

"Something useful in every number"

"I have received copies of your publication, 'Oxy-Acetylene Tips,'" writes a welding foreman, "and like it so well that I do not want to miss future issues. There is something useful in every number, even to a welder who has been in the business twelve years, like myself."

"Tips" is free to all Linde customers. Ask the nearest Linde District Office to send you this monthly magazine which has "something useful in every number." For smaller shops Linde publishes another magazine—"The Linde Oxwelder." It's free, too.

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General Offices: Carbide & Carbon Building
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LINDE OXYGEN

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PORT of SEATTLE



Aerial view of the Smith Cove Public Terminals. The largest commercial piers in the world.

Facilities Consist of Docks, Waterside, Dry, Cold and Bonded Warehouses. Fish Freezing Plant, Fish Storage Warehouse, Ice Manufacturing Plant, 1,000,000 Bushel Concrete Grain Elevator, Vegetable Oil Handling Equipment, Etc.

PORT of SEATTLE

BELL STREET TERMINAL

SEATTLE, WASHINGTON



PORT OF SEATTLE
PUBLIC
TERMINALS
FROM THE AIR

- 1—View of Smith Cove Terminals from the water.
- 2—View of Hanford Street Terminals showing sheds and grain elevator.
- 3—View of Spokane Street Terminals showing sheds and warehouses.
- 4—View of Bell Street Terminal showing sheds and warehouse.
- 5—View of Stacy Street Terminal showing sheds and warehouse.
- 6—View of Smith Cove Terminal from land side.



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SAN FRANCISCO, CAL.

LUCKENBACH STEAMSHIP COMPANY, Inc.
201 CALIFORNIA STREET
SAN FRANCISCO

June 23rd, 1925.

Plibrico Jointless Firebrick Co.
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San Francisco, Calif.

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For the past year we have been using local brick and brick manufactured in the Middle West on our steamers.

In December 1924 we put in the 98 Plibrico. In doing so, we gained four inches on the width of our furnace.

After the vessel had made two round trips to the Gulf ports the wall was examined and found to be in better condition for the length of time it had run than any brick previously used by us.

We hope to place more orders for Plibrico with you in the near future, as we think we can cut the cost of furnace repairs about 50% by using Plibrico.

Yours very truly

LUCKENBACH STEAMSHIP COMPANY, Inc.
By *W. J. Jones*
Port Engineer

WGP:C

Cut furnace costs 50%
"THE LARGEST AND FASTEST GROWING BUSINESS IN THE INTERCOASTAL TRADE"

That's what the Luckenbach Steamship Co., Inc., say they can do by using Plibrico.

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Luckenbach is only one. The President boats, the Yale, the Harvard, the Manukai, the Eldorado—these and many others are increasing furnace life with Plibrico.

Plibrico is ideal for door arches, for furnace fronts in oil-burning Scotch Marine Boilers, and for repairing, as well as for complete linings. Special shapes of any kind can easily be built of this plastic refractory—no special tile are needed.

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1158 Clay Street, Chicago, Ill.



The interior of a Plibrico wall in the F. J. Luckenbach photographed after months of hard service. They say, "We found it in better condition for the length of time it had run than any brick previously used."

Pacific Marine Review

The National Magazine of Shipping

Official Organ
Pacific American Steamship
Association

576 Sacramento Street, San Francisco

404-405 AT 200 BROADWAY, NEW YORK

Member of Pacific Traffic Association

James S. Hines,
President and Publisher.

Bernard N. De Rochie,
Vice-Pres. and Manager.

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Official Organ
Shipowners' Association
of the Pacific

Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager.

QUEENLY SEATTLE

A Gracious Hostess—A Beautiful City—A Wonderful Port

A VISITOR to the city of Seattle is impressed with the cordial welcome extended by her people and with the natural advantages of her situation. This city has, in less than forty years, grown from a straggling frontier settlement to a population crowding the half-million mark; from a port of call for a few coastwise steamers to a place among the first ten ports of the United States; and now she suddenly blossoms out as a charming hostess for national conventions and as the "Gateway to the Orient."

With her double deep water frontage, Puget Sound on the west and Lake Washington on the east, salt water and fresh water, Seattle has developed her natural advantages until her port is second to none, and other ports are coming to her for engineering personnel.

Last year (1924) the port business of Seattle aggregated arrivals and departures of over twenty-eight million net tons of shipping. These vessels loaded and discharged over seven and a half million tons of cargo with an invoice value of 664 millions of dollars. And this is just a beginning. Lumber, fish, fruit, flour, grain, the principal products of the Pacific Northwest, are just getting into their stride. There will be larger growth in the next forty years than in the last forty.

Had anyone twenty-five years ago predicted that Seattle would be hostess to a National Foreign Trade Convention, that person would have been deemed visionary in the extreme, if not entirely off mentally. Yet here is this Northwestern city by the sea chosen to play that part by the National Foreign Trade Council, and giving eminent satisfaction in the role. The writer, just back from attendance at the Twelfth National Foreign Trade Convention, desires to compliment Seattle upon her ability, graciousness, and poise as a hostess and as a leader in progress. The entertainment, the climate, the program were all alike worthy of her position as the administrative and distributing center for the "Charmed Evergreen Playground" and the material progress of the Great Pacific Northwest.

Seattle Harbor Has No Superior

Situated on the largest land-locked body of water in the United States, Puget Sound, the harbor of Seattle could ask for little which nature has not conferred. The connecting channel with the Pacific Ocean, the Straits of Juan de Fuca, is a remarkable ocean roadstead varying from twelve to fifteen miles wide, leading to the main inlet of Puget Sound with five to eight miles width throughout, the shallowest

depth being 136 feet the entire 125 miles from the Pacific. The ample depth of water and wide channel make it possible for the largest vessels afloat to make the Port of Seattle and find berthage without the aid of either pilot or tow.

Besides the main salt water roadstead, Seattle includes a great inland fresh water harbor, comprising Salmon Bay, Lake Union, and Lake Washington, all at a common lake level and connected with Puget Sound by the Lake Washington Canal and making a total water frontage of 200 miles. Ships up to 800 feet length and 32 feet draft can enter the locks at lowest tide and pass from salt to fresh water in from five to twenty minutes. In the fresh water of the lakes, wharves may be maintained secure from destruction by marine wood borers; ships are discharged and loaded without expensive adjustment to the tides and vessels are automatically cleared of their accumulations or barnacles by contact with the fresh water, so that this great inland harbor is a real asset to Seattle in promoting foreign and domestic trade. Many industrial plants are being located upon suitable areas with direct frontage upon this inland Seattle harbor with direct connection from industrial wharves to the world markets.

Public Terminal Corporation

It was the strategic location and natural advantages of this port that drew four great transcontinental railroads toward Seattle as their Pacific terminus. It was this again that led sixty-three steamship lines to make Seattle the main terminus of their great fleet of merchant vessels plying on the Pacific.

It was this fact again, in 1911, that led the people of Seattle and King County to organize a specialized public corporation, known as the Port of Seattle, with comprehensive powers dealing with harbor development. As a result, we find today at strategic locations in the harbor modern, up-to-date port terminal facilities valued at fifteen million dollars.

Large Overseas Piers

The Port of Seattle now owns and operates the two largest ocean terminals of the pier type to be found in any port, either in America or abroad. These two piers, each approximately one-half mile in length, one 310 feet wide and the other 365 feet wide, represent the last word in terminal efficiency. One of these piers has accommodated seven ocean freighters at one time without exhibiting any noticeable congestion or causing delay to either rail or water carriers.

The giant Smith's Cove Terminal, Pier 41, the larg-



Bell Street Terminal, Seattle.

est commercial pier in the world, is equipped with two-story transit sheds, the most modern passenger accommodations, and five miles of railroad trackage on the pier itself with a capacity of 400 railroad cars.

These great overseas terminals, together with the other intercoastal and coastwise facilities considered with the natural facilities of the harbor and the large amount of railroad trackage and mechanical handling equipment, made the Port of Seattle most economical for both rail and water carriers.

Waterside Warehouses

The Port of Seattle has included at each of their terminals, except at Smith's Cove, commodious fire-proof warehouses located as close to the ship as possible, separated only by two or three depressed tracks, as the case may be, from the transit shed, so that freight can be unloaded from the vessel, transported across the wharf and placed in permanent storage by one handling movement. These warehouses are also specialized in order that the import and export commodities can be handled through this port with the greatest economy and dispatch.

In connection with the Hanford Street Terminal, a bulk grain elevator with a capacity of one million bushels has been provided and conveyor equipment installed for the transfer of bulk grain from the storage bins direct to the hold of the vessel at the rate of 24,000 bushels per hour.

At Smith's Cove Terminal there will be found open storage for lumber, steel, iron, machinery, and other bulky commodities which constitute a large part of our export cargo. There is also found at these terminals large capacity steel and concrete tank storage pumping machinery, oil lines, and conveyors for the vegetable and fish oils of the Orient and Alaska.

Waterside Cold Storage Plants

The specialized cold storage warehouses, particularly the plant of Spokane Street Terminal, where the latest facilities have been provided for freezing and storing the fish products of Puget Sound and Alaska, have been an inestimable boon to the independent fishermen. Sharp freezing rooms that can be lowered to a temperature of 40 degrees below zero have been installed for freezing the largest fish, and the storage rooms are capable of handling over four million pounds of fish at one time.

In the large seven-story cold storage building at this terminal, which has a net capacity of 15,000 tons, or approximately 600 railroad cars of freight requiring refrigeration, will be found apples and pears from the interior, barreled berries from the surrounding valleys, reindeer meat from Alaska, and beef, eggs, butter, cheese, and vegetables for the local markets.

The Port of Seattle has its own ice manufacturing plant to supply the needs of the transportation companies and the fishing fleet. This modern ice plant has an output of 70 tons per day, although this capacity can be increased to 140 tons per day with the addition of a relatively small amount of equipment. A large size ice storage house, capable of holding 6500 tons of ice, gives an opportunity for the more economical manufacture of ice during the winter months. This ice is used for icing railroad cars and supplying crushed ice for crated and boxed perishable commodities.

At the Bell Street Terminal cold storage plant of 10,000 tons capacity, situated on the central waterfront, berry products and vegetables are stored for local consumption; also, this plant is given over largely to the storage and handling of mild cured salmon and salt herring.

Mechanical Freight Handling Equipment

The Port of Seattle has to date installed on its waterfront terminal facilities and its warehouses, mechanical equipment valued at approximately \$1,100,000. Heavy capacity equipment, such as shear leg derricks, stiff leg derricks, gantry cranes, locomotive cranes, are used in connection with export cargoes consisting of lumber, iron, steel and machinery.

A structural steel shear leg derrick at Smith's Cove Pier 40, with a lifting capacity of over 100 tons, recently handled a private yacht shipped from the Atlantic Coast, weighing 70 tons, from the deck of one of the intercoastal vessels at the tariff cost of \$125, as compared with the charge made in the Atlantic Coast port of \$750; also, a shipment of six 55-ton boilers was handled on a trans-Pacific liner in one hour and twenty minutes, or an average of one boiler every thirteen minutes. This is illustrative of how economy and dispatch can be obtained by the installation and use of special mechanical freight handling devices in the loading and unloading of vessels.

TWELFTH NATIONAL FOREIGN TRADE CONVENTION

Seattle, June 24-25-26, 1925

THE FOREIGN TRADE OUTLOOK

By JAMES A. FARRELL

The National Foreign Trade Council and the name and genial personality of James A. Farrell, chairman, are linked so closely together that no convention of the Foreign Traders is really started until it has heard again the practical optimism of its chairman.



FOREIGN trade of the United States, whether considered in terms of value or of volume, has grown to substantial proportions. The aggregate value of our exports and imports for the calendar year 1924, was more than eight billion dollars, a sum the significance of which, even after wartime experience with large figures, is difficult to appraise. It is more than enough to pay for the construction

of twenty Panama Canals, or at the rate of one such canal every fifteen days.

The volume of this colossal foreign trade was more than 93,160,000 tons of 2240 pounds. We cannot visualize that. The attempt to portray it in terms of one day's effort leads to astonishing results. This trade went on, last year, at the rate of more than 312,000 tons for every working day. It required the daily arrival at or departure from the different American ports of from sixty to seventy ocean steamships averaging more than 8000 tons of carrying capacity. It required the daily service of more than 10,000 freight cars, carrying an average load of 30 tons. If it were conceivable that all that volume of different commodities could be handled in a day through any one port, it would require a fifty-car freight train every seven minutes, for the full twenty-four hours, to clear the docks. An army of men would be needed to furnish the labor.

The Record Year

There is nothing like this foreign trade of last year in the history of the United States; it surpassed all records in volume. But this year gives promise of exceeding it. There was a brief period, during the time of inflated prices in 1920 and 1921, when the number of dollars represented by our exports and imports was somewhat larger than last year. But even in those years the quantity of our products sent abroad and the quantity of foreign products imported did not equal in volume our trade of 1924.

Both methods of measuring have their advantages. A smaller volume of trade at high prices may mean substantial profits. A larger volume may not mean such satisfactory profits, if prices are lower, but it will certainly indicate a wider range of employment among producers, and it is not to be forgotten that, after all, continuous occupation is the chief essential of prosperity.

The figures of our trade for 1924 represent a growth of production and enterprise in the United States that is cause for satisfaction. It was very nearly double that for 1913, the last year before the war, whether measured by value or by quantity.

The war stimulated activities and injected an element of violent fluctuation, with a period of apparent but fictitious increase, from which, I think it is safe to say, we have now recovered; so that the growth shown in the last three years may be compared, with reason, to the development during the ten year period prior to the war.



The city of Seattle from Elliott Bay.

Normal Growth

The trend is again steadily upward. There are sound reasons for it. (Do not interpret that as a prediction on my part that there will be no setbacks.) From the very nature of our trade there are bound to be fluctuations which will affect, more or less seriously various factors of it. It is made up of so many elements and represents so large a number of different enterprises, each operating under conditions of its own, often differing, and sometimes materially, from those under which concerns in the same line work, that no general statement can be equally applicable to all. But for our foreign trade as a whole I believe that the trend is favorable.

There are several considerations which seem to sustain this belief. Before the war a small number of items comprised the great bulk of our exports. Twenty different kinds of commodities then furnished approximately 90 per cent of our sales to foreign countries. In 1924, however, the first 100 items on our list of exports constituted only 87.75 percent of the total. Of these 100 items, 72 contributed less than 1 per cent each. In the remaining 12.25 per cent, several hundred different products were represented, each by a fraction of 1 per cent.

This widely diversified commerce is shared by a much larger number of firms than before 1914. We hear occasional criticism that American business is intermittent in export trade. This charge is sometimes circulated to shake the faith of buyers in the continuity and permanence of service at the hands of American exporters. The charge does not survive analysis. The number of traders of all nationalities in competitive markets has decreased since the abnormal activity which followed the war, but there is today no market where standard American manufactures are not to be found. This was not true prior to 1914.

Obviously there is a much wider range of direct interest and participation in our export trade than there was ten or twelve years ago. That is merely stating again a fact which we have all observed, and which has evoked comment at different National Foreign Trade conventions. It means, necessarily, that there is a steadily expanding effort on the part of Americans to push their trade in other countries. That effort is bound to accomplish certain results. The experience of these conventions is quite sufficient to prove that, without reference to the figures of trade development.

Foreign Trade Research

For the last ten or fifteen years there has been in the United States an intensive and sustained study of every phase and factor of foreign trade, which, I venture to say, has not been equalled in any other country. This study has been carried on not only at these conventions, but in scores and hundreds of other smaller meetings; at gatherings of men representing at times only one line of activity, sales managers, export managers, credit managers, bankers, traffic men, executives handling every branch of the business. They are constantly considering every sort of problem, accumulating helpful information, taking part in joint discussions, cooperating with one another in the effort to improve themselves in every particular connected with any phase of their work. We have heard, at these conventions, the most animated discussions of matters which may seem, to the uninitiated, to be of the most trivial and minor consequences; for example, the difficulties of doing business because of the mul-

tiplicity of languages, the fluctuations in the value of currencies, lack of means of communication, etc. Every one of them means much to those who are seeking to develop their own equipment for the successful handling of foreign business. Not only is individual improvement manifesting itself in the results accomplished, but the number of those directly concerned in this constantly expanding trade is all the time increasing. There is now, among the people of the United States generally, a more intelligent understanding of the relationship of foreign trade to their own daily life. To this better understanding the annual Foreign Trade conventions have powerfully contributed. Our ability to maintain and develop our foreign trade has steadily increased.

Generally speaking we have the productive capacity in this country to enable us to maintain a considerably larger overseas commerce than we now enjoy. This is one of the chief factors influencing us toward foreign trade. If we are to have our productive capacity occupied, we must be able to sell substantially all we produce at fairly remunerative prices. Export prices, however, are determined by competition in foreign markets. Therefore it behooves us to keep our production costs at the lowest possible level through resourcefulness in the use of mechanical devices, in the utilization of every possible improvement in facilities for production, and economy in overseas distribution. Sometimes, indeed, we encounter price competition in foreign markets which we cannot meet. We even face, at times, foreign competition in the domestic market so severe that we cannot meet it. The situation, however, is not unusual, as we have always had to deal with it, and on the whole we have met it, as our constantly growing foreign trade proves. We have met it by quality of product, by satisfactory service to the buyer, and close attention to his needs, even when, at times, we could not meet it in price.

Competition

We need not ignore, moreover, the fact that while we are facing the competition of other industrial nations in foreign markets, we are also giving them occasion to face American competition in the same fields. Signs are not lacking that they frequently find our competition quite as interesting as we find theirs. It is not an unmixed evil. There are some elements of compensation in it, one of which is the fact that competition usually widens the range of selection for the buyer and not infrequently results in an increased total trade, and we have our chance to get our share of the increase. Further, a considerable part of our export trade is made up of raw materials, essential to the industry of the purchasing countries or of articles which, because of their quality or their service, are in demand.

In an export trade such as ours, made up of thousands of different products, the output of hundreds of different concerns, there is always bound to be certain variations in the sellers' prices, so that at times it happens that one concern will find itself unable to meet a particular foreign competition, whereas others can meet it. The one who cannot is likely to declare that there is a depression in foreign trade or even, as we hear occasionally, that it has been destroyed by foreign competition. It is unsafe and unwise to make such generalizations. The authoritative record of our trade, as a whole, shows that it is making steady progress, and that is its promise for the future. Month by month we get the record of failures in the domestic as well as in the foreign trade. They are regret-

table, but unless they are exceptionally widespread and numerous, they do not prove much else than that certain concerns have not been able to succeed where others have.

American Wealth

We can produce, we can sell, and we have done fairly well in meeting foreign competition, even in periods, like the present, of exceptional severity. Neither we nor any other people can sell if we cannot find markets which have the power to buy. That is one respect in which the American exporting manufacturer has advantage over all others. He has a market of enormous capacity at home, almost always capable of absorbing the chief part of his output, thereby enabling him to reduce unit cost through increased production. The constantly mounting sums spent yearly in this country for luxuries, amusements, and trivialities testify to the extraordinarily rapid increase of wealth here. Based on this home market, our manufacturers are well justified in looking abroad for fields, the supplying of which will enable them to produce more than they can expect to sell at home. Naturally they seek first for those foreign markets to which their products are likely to appeal and which have the buying power to take them. In most cases Europe has been our chief foreign buyer.

There is an impression that Europe has been a purchaser only of our raw materials, but even a casual examination of the detailed government reports will show that Europe is a heavy purchaser of a great range of manufactured articles and luxuries, as well as of raw materials and agricultural products. In view, moreover, of the unpleasant effects felt in this country in the last few years because of the decreased buying power of Europe resulting from the war, it seems that our people generally should have a better understanding of the true situation.

Europe

Europe will in the nature of things regain a portion of her former trade in neutral markets as soon as industry becomes reconstructed in the nations of that continent. There are always signs that the manufacturers of Europe are renewing their former trade affiliations.

Europe is steadily growing into a better condition. Every year since the signing of the Armistice, there has been distinct improvement. In most European countries the people have gone back, energetically, to work. The Russian experiment with communism is still slowly working out its disastrous course, but in practically all other countries, with the possible exception of Great Britain, where unemployment continues to be a serious problem, the improvement is marked. In Italy, France, Belgium, and Germany, unemployment is practically negligible.

In spite of all the obstacles naturally resulting from the war, economic conditions generally in Europe are steadily growing better. No country there, it is true, can make such a showing in trade development as that of the United States. We have advanced far beyond our record of ten years ago, but Europe is still below that record. Great Britain, with more than a million men out of work and receiving government doles, is still struggling to equal her trade of pre-war years. But we have seen her set her house in order and bring her currency back to par. France and Belgium have been able to reach and even exceed, a little, their 1913 trade figures. Italy has nearly caught up, and Germany, after the ruinous course of inflation that she followed until last year, has climbed back to

something like half of the shipping and trade she had before the war. Year by year, in all these countries, production is increasing, however, and with it, of course, consumption. Their buying power is coming back. In that process they are taking increasingly large quantities of the products, raw and manufactured, of other countries, including the United States. That is why Europe as a whole continues to be America's best customer.

World Standards

Despite this improvement in Europe the world in general, except the United States, is still living on a plane considerably below that it would have been occupying if there had been no war. On every one of the six continents millions of people, for more than ten years, have been doing without all kinds of things that they have been accustomed to have. Inevitably under such circumstances, the satisfaction of mere desires must yield to the satisfaction of actual needs. Foods, and materials for clothing and housing are sought first, but the expanding exports of many things not absolutely essential show that capacity to provide enjoyment is improving as well as that to supply the necessities of life.

It is not to be expected that with a return of the old buying power there will be an effort on the part of peoples who have lived under restricted conditions for so long to obtain all the things they have done without in these ten years. The deprivation they have endured does not constitute in its entirety a shortage which must be made up. There are some distinct elements of shortage, chiefly in land transportation, but in most cases the need or desire that was unsatisfied has passed with the lapse of time, and it is not to be counted as a reason for expecting a corresponding increase of trade in the future. What is to be expected, however, is that with the yearly increase of wealth through steadily growing production there will come corresponding effort to get back to the former living conditions and to improve them. That is merely the normal course of human nature. The trade of Europe and the rest of the world will then show the same sort of trend which that of the United States has been showing, and in that general increase there will be further opportunity.

Foreign Investments

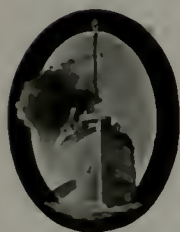
One result of our change in economic status from a debtor to a creditor nation, is the increased readiness of American capital to seek or accept investment abroad. We are all familiar with the extent of foreign loans placed in this country in recent months. The proceeds of such loans go abroad, as a general rule, either in shipments of gold or as exports of merchandise, including raw materials. Unquestionably the large excess of our merchandise exports over imports last year represented in great part foreign loans placed here. Such loans may, and often do, mean continued foreign trade as well as these immediate exports.

A short time before he took office, President Machado of Cuba, in a speech at New York City, called attention to the remarkable growth of trade between Cuba and the United States in the last twenty years, an increase from seventy million dollars to five hundred and sixty million dollars. The Cuban President was merely congratulating the two countries on that trade, and did not go into the reasons for its development. If he had, he would have spoken, I have no doubt, of this very matter of foreign investments.

(Continued on Page 332)

AMERICAN BANKING AND WORLD REHABILITATION

By HENRY M. ROBINSON



UR American bankers face new problems in the world's rehabilitation.

It will be extremely difficult to discuss this necessity adequately within the time limit allowed, so I ask indulgence if, in the discussion, many of the factors bearing on the subject generally may not even be mentioned and many others barely touched upon.

We will approach the discussion of the duty of American bankers in the matter of foreign loans, foreign investments, and foreign trade, from the standpoint of the selfish interest of the United States. We will eliminate any suggestion of our responsibility from a humanitarian or social standpoint. It is better not to confuse the two attitudes; indeed it appears that proper action from an enlightened self-interest viewpoint may easily prove of the greater benefit to the people of the rest of the world. Moreover, confining our discussion to a consideration of our selfish interest removes an imponderable issue that is difficult to weigh, when we undertake to measure economic movements.

Because our government properly prefers to handle its own questions of policy, the approach to our problems must be free from all political considerations and of necessity concern itself with practical means and practical results.

In all that we are saying, we are not considering enterprises relatively more venturesome nor more inviting of intrigue than the operations of our forbears, both in New England and in the South, in the early part of the last century.

The question has been pounded whether the bankers of the country should impose conditions upon foreign borrowers, for the use of the proceeds of such investment or current loans for the protection of our own nationals engaged in production and manufacturing. This has been tried in other countries, under normal conditions, and has been abandoned. Under normal conditions this would not be a wise course.

But, where extraordinary conditions such as prevail at present have set up new and artificial credit and financial situations, and especially where as important a new factor as reparations payments has modified the normal situation, it behooves the bankers, in the interests of the country generally, to take into consideration the fact that loans should be made with a view of their effect on the business life of the country.

It may be wise also to consider what steps may be taken by which we may be kept informed of and in contact with the ramifications and ever changing

aspects of the international financial system which so vitally concerns us.

The figures given by the Department of Commerce indicate that the United States is the only great commercial nation which has recovered and made an advance in world trade and its advance shows but 19 per cent over the 1913 figures. The total world trade is still about 5 per cent below that of 1913 in quantity.

In making this comparison, no allowances have been made for the normal increase that might have been expected but for the war. As compared with 1913, and without the factor of increase, Europe shows a lag of 25 per cent and some individual countries as much as 50 per cent.

The damming back of the normal flow of international credits has been one of the difficulties in the restoration of world trade.

The Gold Standard

England and the United States, working together, have taken the most important forward step in the restoration of the gold standard in England, with the practical certainty that such action will force the other important commercial countries to a similar action in the comparatively near future. I believe that we should all be in accord in the thought that the action of our Federal Reserve System, in agreeing to work with the Bank of England to the end that the English currency should be put on a gold basis, is one of the wisest, most courageous and far seeing acts ever done by a bank of issue. I believe that we should all recognize that this action not only has been of immeasurable benefit in international trade, but that, from a selfish standpoint, we are relieved of the menace of the de-

valuation of gold, and in addition that it has helped here at home in respect of the danger of inflation.

The United States is in the position of the commercial banker. Individual concerns and nations, outside of our boundaries, look upon it as a nation, and a people, overloaded with this world's goods, much desired by other nations, with resultant ingenious attempts to obtain the use of our credits and funds even beyond their real needs—natural, I assume, after a long period of hungry waiting.

The year 1924 with its extraordinary movements, in so far as the United States is concerned, in foreign trade and in foreign investments, raises the definite question whether our bankers have properly directed their efforts so that international transactions work out to as little disadvantage to the producers and marketers of the United States as the circumstances permit.

HENRY M. ROBINSON

The keynote speech of the Twelfth National Foreign Trade Convention at Seattle was that on "American Banking and World Rehabilitation," by Henry M. Robinson, president of the First National Bank of Los Angeles. In his speech Mr. Robinson traces the effect of international financing by American banks and forecasts therefrom the possibilities immediately before us in American foreign trade.

Mr. Robinson is exceptionally qualified by experience and training to handle such a subject, having had wide experience with international finance during the World War, a life-long training in American banking, and on the Dawes Commission.

We must all recognize that to a commercial banker, credits constitute his stock of merchandise; to an investment banker, securities are his merchandise. Both are resentful of interference, governmental or private. While this is true, it is certainly not to be thought that the American banker does not fully realize that loans made outside the boundaries of this country may finally militate against the country, either because such loans support a competitive situation, unduly detrimental to us, or because excessive loaning may unduly tighten the financial structure at home.

Restoration of Europe

Eighteen months ago no one questioned the absolute need for the economic restoration of Continental Europe, if it could be brought about, because it was recognized that commerce and trade were so definitely inter-related that the great economic organizations on the continent of Europe must be restored and the people be brought back to a position of consuming ability, as nearly comparable to former conditions as possible. It was also recognized that the losers in the war should be put in a position that would compel them to assume part of the losses of the war.

It would be well to make a brief exposition of the present position. A program was set up which contemplates the payment by the German people, into a German bank, for the credit of the Allies, of annual sums ranging as follows:

1000 million gold marks	.....	first year
1220 million gold marks	.....	second year
1200 million gold marks	.....	third year
1750 million gold marks	.....	fourth year
2500 million gold marks	.....	fifth year

and 2500 million gold marks each year thereafter. This is the standard annuity, to be continued at the same rate unless unusual prosperity obtains in Germany, when provision is made for an increase based on a prosperity index. The year begins on September 1 and ends on August 31.

As a part of the stabilization of Europe under the reconstruction, it was necessary to bring about a stable condition in Germany. To this end, a very considerable loan, aggregating 800 million gold marks, net, was made to the Government of Germany; this country contributed directly a little over half of that amount. In addition, our investment bankers and commercial bankers have made many loans and advances to German utilities and industries, as well as to political subdivisions.



Ocean liner discharging to lighterage sampans in an Oriental port.

The current loans have been in the form of purchases of various types of bills or direct obligations of concerns and in the form of deposits made in German banks. The investment bankers have made long term loans to private concerns, on mortgage and other security, and have also made long-term loans to municipalities. The aggregate of current loans and investments loans has been very considerable.

Trade Balance

In view of the enormous transactions of the last year, which, because of heavy foreign investments, resulted in a final debit of \$471,000,000, and in view of the special application of some of the loans, the question naturally arises—are our bankers properly considering the effect of such loaning on our own industries and commercial life? It may not be amiss to recall the figures of last year. The Bureau of Foreign Trade and Domestic Commerce gives us the following:

The reported favorable balance on merchandise exports exceeded	\$980,000,000
Deducting net excess in movement of gold and silver	222,000,000
Leaves a visible foreign trade credit balance of....	\$ 758,000,000
The income received on foreign investments was at least	610,000,000
Sales of securities to foreigners	227,000,000
Principal of debts paid United States	23,000,000
Net ocean freight	5,000,000
	<u>\$1,623,000,000</u>

On the debit side, remittances	300,000,000
Tourist expenditures.....	500,000,000
Net amount foreign refunding of existing issues.....	894,000,000
Other foreign investments..	400,000,000
	<u>\$2,094,000,000</u>

Debit Balance

A restatement of our balance of international payments in 1924 made by Bureau of Foreign and Domestic Commerce in its Trade Information Bulletin No. 340 reduces this debit balance by more than one-half. If the increase in foreigners' bank deposits is taken into consideration, the deficit is entirely eliminated and the year's transactions remain practically in balance.

The use by our private banks of our credit position and the Federal Reserve facilities, for the handling of foreign bills in the open market, representing world business—business that does not touch our shores, has been done in very large amounts. We have acquired a profit in such transactions which will undoubtedly run into large figures and it is being credited to our account, although it does not appear in the credit items mentioned before. In addition these purchases of foreign bills in the open market have helped finance the operations in the other countries.

Reversing Foreign Trade

Foreign trade for the year showed the greatest export demand for finished goods and import demand for raw materials, the reverse of our former normal experience. This may be a definite indication of a trend toward the development of this country as a fabricating and financing nation in international commerce. The United States is coming to make more in-



Sailing vessels loading lumber at Puget Sound mill in the early eighties.

vestments in practically every section of the world, with yields fluctuating widely, indicating some discrimination in risks. The primary interest appears to be in rehabilitation in the war worn countries. The question has been asked whether in making these advances we are not building up a Frankenstein, in other words, creating for our competitors an unduly favorable position?

Questions are being continually asked—How can the foreign manufacturers, especially the German and Belgian, export to the United States at extraordinarily low prices? An examination of the source of most of the commodities dumped into this and other countries in the early part of last year, at unduly low prices, discloses the fact that they were very largely "distress" sales, where the producer has either exhausted his credit or, because the rates in his particular country were so high, preferred to sacrifice the price on his commodities.

To the extent that American loans made abroad are sound and not excessive, and to the extent that the making of such loans has reduced interest rates and made possible borrowing, theretofore impossible, the pressure to sell, irrespective of price, has been relieved, and to some degree at least, competitive pressure has been reduced.

May we not assume that such loans have contributed greatly to bring about that result? At the same time, an easier financial condition in a distressed country soon brings about demands for increases in

wages, and soon their comparative cost level rises, and to that extent weakens their comparative competitive position.

When we come to a discussion of what we, as private individuals and organizations, should do to protect our position in this country, there are two factors that we must consider fully: One, the payment of reparations; two, the effect of the settlement of inter-allied debts.

Gold or Commodities

In order to reach our decisions, we must realize that debts can be paid only in gold or commodities. We have set up the machinery for collecting the reparations debt; for the first two or three years the collection and application of the reparations payments are not likely to affect importantly the foreign trade situation for this reason: Deliveries in kind, of coal, phosphates, dyestuffs and other articles, which Germany has been delivering since the Armistice, will be continued in approximately the amount in value that has obtained in the past, and the payment for these will absorb the major portion of the payments for the first three years. Part of the remainder will be applied to the payment of certain occupying army costs. Only the balance will affect Germany's exchange position, because it will be withdrawn under the Recoveries Act, or in the form of exchange.

However, the movement under such pressure may be advanced in point of time through the German banks furnishing the German producer with credit in exchange for an assignment from the Allied country of their participation in the reparations that are to be collected in later years—this provided the German banks are in a position to carry such a load for such a length of time. To some degree this will probably obtain.

German Reparations

The problem, however, will take on a more serious aspect in its effect on competitive conditions in world trade when the amount of reparations collected in Germany is deposited in the Reichsbank for the credit of the Allies and reaches the normal annuity of twenty-five hundred million marks, or about \$625,000,000. When this amount is collected and placed to the credit of the Allies, unless Germany has made unlooked for expansion of exports over imports, the pressure of the desire to realize on these credits, will result in many types of ingenious schemes for such realization.

There appear to be four outstanding general methods for getting out of Germany the value of the credits the Allies will have in the bank. These are:

LUMBER IN THE NORTHWEST

The Pacific Northwest has long been famous for its stand of heavy fir timber and is now looked upon as the last stand of the lumberman in America. In our illustration is shown the loading on board an intercoastal steamer of a huge timber to be used as a spud for a dredger. The squared timber measures 4 feet by 4 feet, 72 feet long. During the war many fine wooden hulls were built from timber of this class. The steamer is the Iowan of the United American Lines.



1—By the further expansion of German exports to the general world markets in an ordinary business manner and under normal conditions, thus creating a favorable gold exchange position.

2—By special arrangements between the Allied Governments on the one side, acting through the Transfer Committee, and Germany on the other, for deliveries in kind and performance of services when such can be pursued with proper regard to each others' interest. This may not possibly be the major part of the total, but it may be an important method.

3—By working out plans for the development of any projects, especially in the newer and rawer countries, which have been designated by some as "colonial projects" and by others as "assisted schemes," such as opening up Belgian Congo and Morocco.

4—By permanent investments inside of Germany, ownership of which has been transferred to non-allied or former neutral countries for adequate considerations, available outside of Germany to the Allied Governments originally entitled to the credits. This method would be effective during any lag in realization of these credits, which resulted from inability to transfer reparations payments promptly through any of the other suggested methods.

European Loans

I believe that, in the final analysis, the "assisted schemes" method may easily prove to be the most important, both in amount and its effect on the producers in other countries. This statement is on the assumption that the reparations stand alone. But, in as much as we are the creditor of all the allied nations, when the inter-allied debts reach a general settlement, the whole problem will shift. Great Britain, France and Italy have to receive payments from Germany. Great Britain would have to pay the United States all Germany pays her and all she may receive from France and Italy. France and Italy having settled the basis for payment of their war debts, all three will become merely intermediaries between Germany and the United States, and on the figures it might easily be that over half of whatever is paid by Germany would be "by-passed," or short circuited between Germany and the United States. The problem, therefore, becomes, over the major portion of the field, a German-American one.

American Position

Germany will be a great surplus exporter of goods, as a result of her rehabilitation. In this case, the United States will be facing the forced exporting from Germany of goods for something more than half of



View reproduced from an old print showing coastwise lumber schooners taking on cargo at a Pacific Coast out-port where the timber is delivered by chute to the vessel from the top of a high bluff.

the reparations annuities (possibly \$350,000,000 a year), and the pressure will be either directly or indirectly against this country. The only way that other countries could continue to take German goods would be for America to continue to make investments and loans to those countries. To that extent, we have added a factor of additional pressure for investment in other countries. American bankers, therefore, both commercial and investment, will have, as I view it, a continuing and probably increasing incentive to handle foreign loans and investments. The industrialists, in turn, will be quite as anxious that such loans be made, especially if done with proper consideration for their problems.

"Assisted Schemes"

In as much as it is likely to prove that the most important method of realizing on the reparation credits is through the medium of "assisted schemes," we should begin to consider now what our part will be in connection with such projects as we shall be called upon, directly or indirectly, to finance.

Let us try to picture the effect of the pressure of unemployment (which in itself means necessity for colonization) in the European countries, and the effect of the pressure to realize on reparations, if and when the normal world trade of Germany fails to produce an export surplus sufficient to pay the reparations.

Prior to the war the development of new projects in new countries had reached its peak, but stopped al-



A Columbia River sawmill and log farm.

most entirely at the outbreak of the war. What is more natural than that the Allied Governments, in their desire to realize on reparations, should call upon Germany to produce certain products useable in connection with the development of some colonial interest, for instance, or suitable to some country in which one of the allied countries has a friendly interest?

The Belgians want to develop the Belgian Congo; France, Morocco and Madagascar; England, Australia and many of her other colonies. I have seen the outlines of several projects in the colonies of allied countries that are being worked on at the present time.

A typical project would be the development by a group of industrialists in one of the allied countries of an undertaking in one of the colonies where, say 40 per cent of the total cost of the project could be in the form of projects to come out of Germany. Of the remaining 60 per cent of the total cost of the project, one-half, say, might be applied to the purchase of products of industries in the allied country promoting the project, and the remaining one-half applied to the payment of labor in construction.

The whole project would be pledged as security for a loan of 60 per cent of its total cost, and if our credit relation to the rest of the world is to be maintained, as it promises to be, the loan, in its finality, will be carried largely in the United States.

If this type of project is to be considered and finally consummated, we should in some way sit in from its very inception. Most of such projects will call for the production in Germany of heavy tonnage products, such as rails, cars, locomotives, hydro-electric machinery and the like. Further, German producers, through this, will have their operations artificially "hot housed" and in the nature of things we may expect that, through increased mass production, dilution of overhead, and other economies, they could reduce their operating costs for such products to a point where their competition in the general markets of the world with similar American products would prove a serious factor.

It appears that we shall of necessity be forced to continue to make investments abroad, because of the favorable trade balance and income on foreign investments, with the addition of the results of the

reparations payments and debt payments, and it behooves our industrialists, foreign traders and bankers to associate themselves together for a better understanding of these problems.

Coordinating Board Suggested

We have at least five different groups of those interested in the questions, but all viewing the problem from a different angle, and too often to the exclusion of a proper consideration of the position of the other groups. Would it be presumptuous for me to suggest that there are at least five private organizations, representing five different elements of our business, that have a definite interest in the working results of the payment of reparations and the payment of debts? Of course, our government also should be, and is interested in the problem.

Would it be a bad idea to create a board for the coordination and compiling of available information, with two members selected from each of the following: National Foreign Trade Council, American Section of the International Chamber of Commerce, United States Chamber of Commerce, American Bankers' Association, Investment Bankers' Association of America, and two of the cabinet officers, preferably the Secretary of Commerce and the Secretary of the Treasury? Let one from each of the organizations and one of the secretaries be designated as the members of the board and the others as alternates, so that the alternate could be present if the member had to be absent.

The organizations themselves could furnish the data and one of them could probably compile the data so furnished. The board could then consider the material thus developed. This could be done without setting up any particular machinery. No attempt at definite formulae, or rigid plans should be made, but rather through frank discussions of reasonably accurate data, the various organizations could at least have their information coordinated and there would be a strong tendency to be governed accordingly.

It appears that we shall be under economic compulsion to make foreign loans and investments. It appears that the making of such loans, in the finality, will be of both direct and indirect advantage to our nations business, if made with wisdom. It appears that the probabilities favor unparalleled developments

in new countries and this, in the finality, will be of extraordinary advantage generally to the business of this country. It appears quite certain that in the earlier stages it is more than a duty for the various business elements of the country to operate with due consideration to the effect of their actions on the other elements.



At left is a view of the Portacompiers of the City of Tacoma. This municipally-owned terminal is equipped with every modern device for the handling of lumber and lumber products.

SELLING AMERICA ABROAD

An Exposition of the Duty, Responsibility and Opportunity Facing America and America's Foreign Traders in Present World Conditions

By FREDERICK J. KOSTER



SUCH a title involves the whole question of world leadership.

The world at large probably senses more keenly than do America's own citizens the outstanding position we occupy in the world's economy if not yet as a moral force in world's affairs.

One of the greatest Americans of our day, Elihu Root, in a recent article, said:

"Trade is necessary to modern comfort and prosperity, and trade is maintained by a vast and complicated system of international transportation and finance. From all this intercommunication arise intercourse in literature and art and scientific research and interchange of thought in the moral and spiritual life of the race."

America with her great population, her enormous wealth, and the energy of her people, their inventive genius which stops at no obstacles however great, living under a system of government devoted to the theory of liberating that energy and providing for that equality of opportunity which enables every citizen to develop to the utmost his capacity, should know no limitation in the contribution she can make to the progress of the world.

Then, we should sell America abroad because it is good business, it is good morals, and, because of America's position, it is an inescapable obligation. Without too much detail, view the present situation abroad.

World Conditions

Europe, the center of occidental activity for generations, is greatly disturbed. Progress is, undoubtedly, being made, but the two leading countries of Central Europe, Germany and France, still face great difficulties and the situation is delicate. Russia is not yet ready to enter into free association with the world at large and gives the world deep concern. Italy is making great progress, but has not yet fully found herself. Spain also has not reached a settled state. Scandinavian countries are moving along more nearly normally and their condition may be termed stable. The Balkans are an element of uncertainty. China is seriously disturbed at important points and there is no immediate prospect of her finding herself, nor is that to be expected. Egypt and Turkey have their difficulties. South America and Mexico are making gradual progress towards greater soundness. Among the leading nations of the world, the greatest dependableness in coping intelligently with their problems and who are progressing most soundly are the United States, Great Britain, and Japan, and upon these in

their respective spheres rests the burden of world leadership toward a return to stability.

The World War and what followed taught America that her prosperity is definitely influenced by conditions abroad, and we no longer have that sense of self-sufficiency which for so long was a by-word within and outside our own boundaries. We must not forget that lesson and out of our present prosperity return to that short-sighted view.

The first results of the World War seemed to be disastrous to America, but with the advent of the years have come certain definite values. There has been developed among the various parts of America a greater degree of cohesion. There is in the minds of individual Americans a greater sense of national unity. The necessities of the war forced upon us a recognition of an exceptional capacity to organize and produce, and we have therefore developed among many of our people, particularly in productive enterprises, a greater executive and administrative ability.

This has reflected itself in remarkable results in the way of better organization, more economic production, and, during the past few years, a wonderful improvement in transportation and general intercommunication facilities.

Importance of Foreign Trade

Our capacity to produce has forced a keener sense of realization of the importance of extended markets, and, therefore, a greater interest in foreign trade. We have not yet, however, acquired that business sense with regard to trade abroad that is ours concerning domestic business. The movement throughout American domestic business has been steadily in the direction of economy of production and distribution, greater business integrity, de-

pendableness of quality and service.

The same principles that apply to business within our own borders are applicable to successful dealings abroad. Primarily, there is necessary absolute integrity in commercial dealings—that same attitude, for example, that has resulted in the remarkable success among others of some of the outstanding retail institutions in America, and which is perhaps best expressed in the policy of that great American firm of Marshall Field & Company of Chicago. I have been told that Marshall Field's motto was, "The customer is always right," which meant that the customer was always to be completely satisfied. It is even more important that by dependableness of quality and of service that confidence of the distant customer should be won, than is the case with the nearby one. The same opportunity for rectifying an error is not present. All the more reason for the exercise of especial care.

FREDERICK J. KOSTER

The paper "Selling America Abroad" demonstrates a wide, comprehensive grasp of the subject such as would be expected from a man of Mr. Koster's national and international experience. As president of the California Barrel Company, Mr. Koster is quite a foreign trader in his own right. As president of the San Francisco Chamber of Commerce, his interest in the foreign trade of this port was very marked and he was brought into intimate contact with practically every phase of international relationships. As a long-time member of the National Foreign Trade Council, Mr. Koster has been able to compare and to correlate his experiences with those of the great foreign traders of the world.

George E. Roberts, in his admirable "Economics for Executives," makes the statement, "Time and again in the study of economic questions we are brought face to face with the fact that they are affected by conditions outside the boundaries of our own country. They are essentially international questions because the world has become one economic unit. Such basic matters as the volume of the country's production and the general level of its prices are vitally affected by conditions in the world market." That statement cannot be too often repeated because unfortunately there is still in America too much of an element that believes that we can live entirely within ourselves, and, further, that it would be desirable to do so. To quote statistics upon the volume of our foreign trade would be superfluous. To estimate the relationship between the total volume of our foreign and of our domestic trade, and express it in dollars and cents, would practically be meaningless. It is generally stated that our foreign trade constitutes approximately 10 per cent of the total trade of our country, although it has at times gone beyond that and almost up to 20 per cent. It is not possible, however, to trace the ramifications of that 10 per cent or 20 per cent through the whole productive and commercial scheme that constitutes America's trade, and the actual dollars and cents effect of that volume of foreign trade upon the volume of our domestic trade. Furthermore, as has been so admirably pointed out in some of the literature issued by this Foreign Trade Council, there enter into it so many of the things not only of our daily use, but of our absolute daily necessity, that we have no means of producing ourselves, that we would have to change our entire mode of life to live within ourselves. It is unthinkable, too, that there should be placed restrictions upon the enterprise of our American citizens in whatever fields they might care to enter.

Protection for Foreign Trade

Foreign trade, like domestic trade, grows out of the initiative, perhaps born of necessity, of the individual citizen, but there are many influences that affect the efforts and the enterprise of individuals, and there is naturally a greater reluctance to go abroad than to expend one's effort at home, since within the borders of his own country the citizen is attuned to conditions and the rules under which the game is played are familiar to him. He is reluctant to venture into fields where the rules are unknown to him. It takes courage to go into new fields and, as a rule, the one who takes

the risk bears the full burden of failure, whereas his success is not his alone, but is shared by those at home, and so everything should be done that can in reason be done by those who remain at home to facilitate the enterprise of him who goes abroad; thus, American enterprise in foreign fields should be served by every fostering aid that can be given it. There have been many who have shown the courage and enterprise to go abroad. They have not always had adequate support from those at home. Someone said not long ago that there should be a gold medal placed upon the breast of every American foreign trader, and the experience of many of them has been that not only have they had to face the difficulty of trying to meet the necessities and desires of those with whom they dealt in foreign countries, but they have been the subject of exploitation by the manufacturers and producers at home who constituted the principal beneficiaries of their efforts.

American foreign trade has not always met with the support of the American manufacturer and producer. In too many instances has the American producer looked upon the foreign field as a dumping ground for that which he could not successfully market at home and has handicapped the foreign trader with unsatisfactory goods and difficult terms. On the other hand, some of the leading American business institutions, notably the United States Steel Corporation, of which our chairman is the head, the great electric equipment companies, some of the great oil companies, and others, have so conscientiously served their foreign customers that they have won for America great confidence and good will in the field of their operations abroad.

Reciprocity Needed

Another element that has militated against the soundest development of American trade opportunity is a lack of understanding of the principles of reciprocity. Again I quote George E. Roberts, "According to the principles of reciprocity, the exports of a nation pay for its imports; its imports are paid for by its exports; and the two must in the long run be equal." And, "All discussion which looks to extensions of our exports without allowing for an equivalent extension of our imports ignores the principles of reciprocity." And, "In any comprehensive consideration of export business, therefore, it is necessary to give consideration to imports and recognize the necessity for them. If a country wishes to sell abroad, it must give some



A MODEL LUMBER TOWN

Many millions of dollars have been invested in the Pacific Northwest by lumbermen for mill plant, terminals, logging machinery, and living quarters.

The most recent and possibly most interesting investment of this character is that of the Long-Bell Lumber Company at Longview, Washington. This company purchased a track of timber calculated to keep in steady operation for fifty years a mill having a capacity of 2,000,000 feet of lumber per two-shift day. A site on the Columbia River was chosen for the mill and the mill town. This site was given into the hands of a commission of city planning experts, who laid out on the bare site an ideal modern city to accommodate 25,000 people.

THE CITY OF LONGVIEW

Continuing caption on the facing page, Longview was practically finished underground before street pavement was laid. Fully twelve million dollars were invested in the ground work of this city before a building was started. The pictures here shown were taken last year, fourteen months after ground was broken on the site. A thriving business section, a beautiful modern family hotel, blocks of fine residences belonging to the officials of the company, hundreds of middle-class homes, and many hundreds of workmen's homes now demonstrate the prosperity of lumbering in the Pacific Northwest.

Longview is one of the most beautiful cities on the continent.



thought to the ability of other countries to make payment, for they cannot pay without this help. The purchasing power of every country is in its own powers of production. Immediate payment can be obviated by granting security either directly or by the transfer of securities, but this means nothing but a postponement of payment. Eventually settlement must be made and in the form of goods or services produced." A country cannot expect the door to swing outward only; it must also swing inward.

Our weakness in selling America abroad is in our lack of experience and in our strong position of still being so nearly self-sufficient. Were we in a less strong position, our efforts and our government regulations would be an incentive to foreign trade rather than a deterrent. The increasing foreign loans during the last decade have been forced on our financial interests by our commanding position in world finance. In other words, our financial interests were no longer self-sufficient and were forced to look to foreign investment for an outlet.

Concentrate on Strong Lines

In the matter of foreign trade, we must analyze our strength and concentrate on selling abroad along the lines of our strength. Our chief trade strength lies in our basic raw materials and our quantity production in special lines supported by our large home consumption. Our grain, packinghouse products, lumber, mineral oils, cotton, etc., form the basis for our export trade. Automobiles, sewing machines, harvesters, etc., add materially to our raw products. We can compete on the manufactured articles because of the intensive production due to enormous consumption in this country. We cannot compete with the rest of the world in products of which the main value is in labor, unless our production is sufficient to absorb the great difference in labor costs.

Our development should be along the lines of selling our surplus production in every line, when we are in a position to successfully compete. But, once we start to sell our surplus, let us protect and supply our foreign customers better, if anything, than we do those at home and not look to them as a dumping ground for our surplus only when our production is not absorbed at home.

With the increasing interest in international affairs aroused by the World War, the average citizen and Congress itself are less prone to ignore the needs of

American business abroad. The Bureau of Foreign and Domestic Commerce is a reflection of this increased interest. Let us strive for a more enlightened and productive legislation on foreign trade, such legislation as will make it attractive to American capital to operate steamship lines, insurance companies, tobacco companies, etc., under American laws and protection. Specifically, legislation that will place our corporations and individual workers on a par with foreigners in foreign countries in the matter of income and profits taxes, in protective measures against foreign interference, and such as will have the tendency to subsidize rather than penalize our foreign business, an outlined government policy with regard to foreign trade that can be relied upon by investing capital, and not a changing policy with each new administration.

Wise Governmental Policies

Francis Bacon says in his *Essays on Empire*: "For their merchants; they are vena porta (the gate-vain, distributing blood to the liver); and if they flourish not, a kingdom may have good limbs, but will have empty veins, and nourish little. Taxes and imposts upon them do seldom good to the king's revenue; for that that he wins in the hundred he leaseth in the shire; the particular rates being increased, but the total bulk of trading rather decreased."

We must require respect and protection for Americans and "things American" abroad. An intelligent and keen study of foreign affairs by our Congress is necessary at all times to keep up with changing conditions and policies of competing foreign nations.

One of our weaknesses is our niggardliness as a nation in providing for our representatives in foreign countries. Certainly, we should put our best foot forward. It is not necessary to be ultra-extravagant, but our representatives should be so housed and so paid that they can be expressive of the strength, the wealth and, above all, the dignity of our country.

Organized Accomplishment

These are all things that must be considered in selling America abroad. They are significant, but still more significant are the things that have been accomplished and that are in progress towards selling America abroad. Out of the problems forced upon us by the war, we are actually developing a real merchant marine, a real American trade route system, and many of us have been able to reach ports and extend our business in directions toward which we could not make

the attempt before. Our Department of Commerce, under the direction of Secretary Herbert Hoover, than whom the world has no greater practical economist, has become a valuable concrete practical institution of service to American business.

We have actually learned to pack our goods so that, I am informed, American goods have today the reputation of being the best packed of any in the world.

Organized businesses have greatly assisted our foreign traders, such organizations as the National Foreign Trade Council, which has addressed itself not only to the questions of legislation and directly to our foreign trade considerations, but toward developing in America a national foreign trade sense and understanding of its bearing upon all American business; our National Industrial Conference Board with its studies of American economic conditions and their relationship to the world's situation; the National Association of Manufacturers; the United States Chamber of Commerce, representing the nation's business as a whole, and out of whose activities has grown the International Chamber of Commerce, in turn expressing its influence in one of the greatest contributions that America has yet made to the reconstruction of world's affairs, the work of the Dawes Commission, and upon which we are justly proud to have been represented by a fellow Pacific Coast citizen, Henry M. Robinson, of Los Angeles.

America in World Finance

The contribution that American finance has made to the improvement of the whole world's economic condition, perhaps our contribution to the financial and economic rehabilitation in Europe, has been one of the outstanding features of recent years. The flotation of foreign loans has created a demand for American financial experts to inaugurate and administer financial reforms in foreign countries.

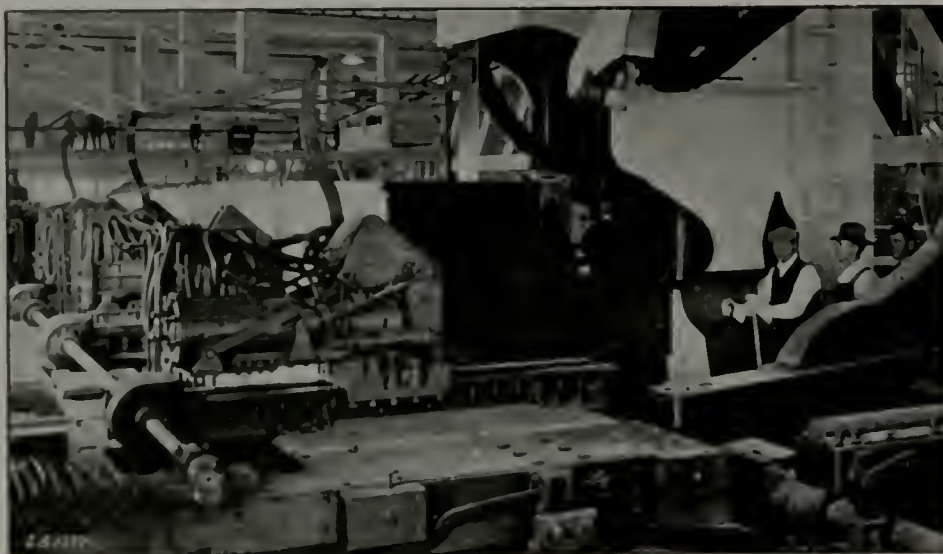
The Tourist

An important factor in bringing America before the eyes of the world in recent years is the American tourist. In 1924 over three hundred thousand American tourists went abroad, not including those who visited Canada, according to the records of the Bureau of Immigration, and while our tourists have not always been the best salesmen of America abroad, I doubt that the criticism of them in Mark Twain's "Innocents Abroad" would apply to the American tourist of today. I think our interests are fairly safe in the keeping of the majority of those who during recent years have traveled abroad.

Publicity

Among other factors of great importance are such items as the advertisements of American goods in publications circulating abroad and, to a certain extent, the American motion picture in foreign countries. The indirect effect of the display of American motion pictures on the sale of American goods abroad is of real importance. The South American housewife is said frequently to inquire where electric toasters and coffee percolators, like the ones in such and such pictures, are to be found. Promoters of the development of film-producing agencies in various European countries dwell to no small extent upon the support they should have from local manufacturers and cite the influence of the American-made film on the sale of American goods as a significant example. The industrial film, made especially to show the manufacture and operation of machinery and equipment, has

(Continued on page 34, ad. sec)



The modern sawmill for handling heavy timber is one of the most finished products of art of the mechanical engineer. From the time the log leaves the pond it is handled entirely by machinery.

Two of the most important machines of a modern sawmill are shown in the two illustrations herewith. Above is the head saw rig, consisting of a huge band saw, by which the log is cut up into merchantable sizes of large dimensions. Below is shown the trimmer, by which the unsound portions of timber are cut off and dropped through into the trash pile below.



CREDIT COOPERATION

An Analysis of the Functions and Operation of the Foreign Credit Interchange Bureau of the National Association of Credit Men

By W. W. MITCHELL

WHEN the National Association of Credit Men was organized thirty years ago, credit cooperation was practically unknown. Business concerns regarded their credit information and ledger experiences as business assets to be used only by themselves and not to be divulged to others under any circumstances. Competitors, in the majority of cases, looked upon themselves as bitter enemies and a competitor calling upon another for information upon a common customer was practically an unheard of thing.

The group of men who organized the National Association of Credit Men in 1896 realized the fallacy of this locked ledged policy and set about to preach the doctrine of practical cooperation. These pioneers realized that credit information retained in the files was an unproductive as currency kept out of circulation and that credit information well invested would mean large dividends to the investor. After thirty years of exhaustive efforts, this association with the cooperation of other organizations has finally exploded and dissipated the theory of every man for himself and the devil take the hindmost, with the result that today competitors are on the friendliest of terms, freely and reciprocally giving each other the most intimate details of their credit transactions.

Foreign Credits

Ten years ago the situation in foreign trade was very similar to the domestic situation of thirty years ago. Manufacturing exporters who had expended large sums of money and much effort in blazing a virgin trail in foreign fields were quite naturally hesitant about giving the new comers the information which has taken them so many years of hard work to accumulate. They felt that these new comers should also run the gamut of difficulty, which they themselves had experienced. During the war, however, as we all know, our curve of exports which had been rising gradually during the course of the year, took a sudden jump, until it became practically perpendicular. Export business, such as we had never dreamed of, was thrust upon us. Orders came from foreign lands to our desks unsolicited and in such quantities that, at that time, the question was not to obtain orders but to obtain the merchandise to fill them. From the foreign trade standpoint we had grown so rapidly that we were like fourteen-year-old boys in last year's suits.

Credit facilities had not kept pace with this influx of business. Something had to be done if credit was to be extended upon an intelligent and safe basis. The

This article is an abstract of the splendid address given by W. W. Mitchell of San Francisco before the Foreign Trade Credits group of the Twelfth National Foreign Trade Convention at Seattle, June 24, 1925.

W. W. Mitchell is an authority on this subject. He is export manager of the Pacific Sanitary Manufacturing Company; president of the San Francisco Export Managers' Association; a vice-president of the American Manufacturers Export Association; and supervisory Pacific Coast chairman of the Foreign Credit Interchange Bureau of the National Association of Credit Men.

In the latter capacity he will have supervisory charge of the new regional office of the bureau opened in San Francisco July 1, 1925.

keynote of cooperation was sounded. Cooperation is a muchly hackneyed word; it has been used and abused so frequently that one is reluctant to even mention it. There are really two kinds of cooperation—abstract cooperation, which is a beautiful thing, talked about by speakers and written about in books but ends there; and the second kind, practical cooperation, which is merely the harnessing of abstract cooperation to make it function in a definite manner and produce energy, just as a beautiful river is harnessed by means of turbines and made to generate power.

It took a comparatively short time to convince exporters that cooperation was the thing needed in credit particularly; and as a consequence random inquiries flooded the desks of foreign credit managers and export managers and the pendulum swung so far in the other direction that it looked for a while as though cooperation would be a menace rather than an assistance. There was a crying need for some practical system to harness this random cooperation, consign it to regular channels, and secure a maximum of information with a minimum of lost motion.

Interchange Bureau

In 1918 a small body of foreign credit managers and export credit managers met in New York, in the offices of the National Association of Credit Men, and laid the foundation of the Foreign Credit Interchange Bureau. This bureau was the turbine by which the great river of cooperation was properly harnessed and made to produce credit information with a minimum of labor on the part of the donor. These men gave freely of their time in outlining their plans and in securing a sufficient number of members to enable this bureau to inaugurate its services on September 22, 1919. The signal success which attended the efforts of these men in establishing the bureau is eloquently attested to by the fact that from the date of its opening, despite the degression of 1921 and a subsequent slow recovery up until the present time, it has shown a healthy and gradual increase of membership and an improvement of service with never a backward step.

Specifications Versus Performance

I can best explain the general function of the Foreign Credit Interchange Bureau as compared to the antecedent information obtained on foreign accounts by using the purchase of an automobile as a simile. In buying an automobile, one is naturally interested in the specifications, length of wheel base, type of the motor, and general appearance. But on the other hand the purchaser is vitally interested in perform-

ance of the car under road conditions. Its appearance and specifications may be of the best, but if it does not stand up in actual performance due to some internal weakness it is not the car to buy. In foreign credit information, the antecedent data supplied by banks, mercantile houses, and traveling representatives correspond to the specifications of the car, and the information given by the Foreign Credit Interchange Bureau shows how the car operates under road conditions, or in other words gives a picture as to the particular foreign buyer's paying habit.

Bureau Files

This bureau has on file the names of the foreign accounts of nearly seven hundred American manufacturing and export commission houses. These members are for the large part located in cities east of the Rocky Mountains, although there are some few on the Pacific Coast. In the bureau's files are reports on 300,000 buyers, located in every country of the world. These reports are kept under code number so there is absolutely no possibility of information being used unfairly.

When a member sees an order from a new customer he obtains from the bureau a report, giving the detailed experiences of other members who have sold this particular customer. From this report he ascertains the terms of sale, which, in view of the many different terms granted to the same buyer, is a most important item of information. He also obtains information as to the highest recent account; manner of payment; the date of last dealing; the amount due or past due. The bureau also obtains in a number of cases antecedent information, which is assimilated and disseminated with the ledger experience report.

Settling Accounts

Going a step further than the dissemination of credit information, the bureau assists its members in the settlement of overdue foreign accounts. In many countries, particularly those of an agrarian nature,

the commercial laws, judicial machinery, and banking facilities are utterly unlike those which we have in the United States or in some of the European countries. Exporters are often faced with the problem of securing payment of overdue accounts and, in view of the prejudice against litigation, are many times unable to do anything but hope and pray. In such cases the bureau, working through a sub-committee on adjustments, writes a diplomatic letter to the debtor, offering its assistance in straightening out the difficulty, if a difficulty exists, and urging that particular buyer to use every effort to liquidate his indebtedness.

Cooperative Protection

The bureau is not acting as a collection agency handling funds and there is nothing threatening in the letter. However, a foreign buyer can easily see that it is not possible for him to place orders in New York and delay payment and then expect to secure credit accommodations in some other city of the country. He knows that American exporters have banded themselves together for mutual protection and for mutual enlightenment.

The bureau has also been successful in securing a number of financial statements from buyers in all parts of the world and is endeavoring to diplomatically educate importers to the advisability of giving financial statements to those from whom they buy in order to establish their credit worthiness and enable them to secure the maximum of credit extension. In addition to the exchange of actual ledger experiences, members, through a weekly confidential bulletin, exchange their experiences on general problems with reference to foreign credit and exporting technique. In all cases where members give ledger experiences on a concern they are automatically sent a reciprocal copy of the complete report, which keeps their files turning over and constantly up-to-date.

This bureau is entirely non-profit making, mutual,



THE PRIMEVAL FOREST

Wonderful are the forests of Oregon and Washington, Northern California, and British Columbia, where the logger has not yet penetrated. The giant redwoods, pines, cedars, and spruce tower hundreds of feet above the forest floor. Ferns, azalea, and wild grape, dogwood, huckleberry, and many species of wild flowers form the undergrowth.

Such forests are sources of great wealth to the lumber men, and in case of many hundreds of thousands of acres the lumber man has been followed by the dairyman, the farmer, and the orchardist, producing a more permanent form of wealth.



and cooperative in its status, and its policies and plans are supervised by a committee composed of its own members, who are giving freely of their time in administering its affairs.

Western Office Opens

The National Association of Credit Men has recently divided its organization into three divisions. The Eastern Division, with offices in New York; the Central Division, with offices in Chicago; and, on July 1, a Western Division will be opened with offices in San Francisco. B. B. Tregoe, who has managed the foreign credit department of the association for the last nine years, will take over the management of this Western Division office and will undertake the work of expanding the interests of the association on the Pacific Coast. The Foreign Credit Interchange Bureau has been unable to adequately serve its members on the Pacific Coast for the very obvious reason of the great distance and time lost in mail service. For this reason a Pacific Slope branch of the bureau is to be organized in connection with the Western Division office of the association, with headquarters in San Francisco, and I have been appointed to serve as chairman of the supervisory committee, which will outline the policies of this branch of the bureau and administer its affairs. The personnel of the supervisory committee will include representatives in the exporting centers of the Coast.

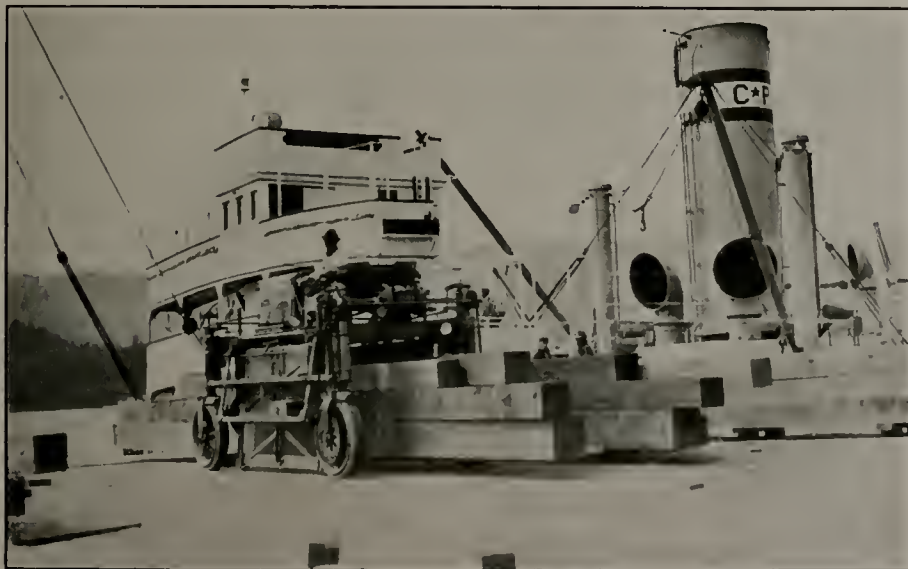
The establishment of this branch of the bureau will enable exporters to secure prompt information on

their foreign customers and will consolidate, through this practical means of cooperation, foreign credit information of the Pacific Coast and that of the East. This branch of the bureau will act as a clearing house for foreign credit information of Pacific Coast exporters. A system will then be established by the means of telegraph and air mail to secure the experiences of the eastern exporters, so that a western exporter will receive a report in the minimum of time covering the entire country. There seems to be little doubt that this tying up of the East and the West on foreign credit information will be of an immense benefit to the exporters of the country as a whole and the establishment of the Pacific Coast bureau will be a very direct benefit to all of the exporters in the western states.

Ultimate Goal

The ultimate goal to which the Foreign Credit Interchange Bureau and the Pacific Coast branch of the bureau are working is the affiliation of every reputable exporter in the United States. When such an Utopian state in foreign trade has been reached it will not be possible for any foreign buyer to place an order in the United States without this organization having a complete record of this particular buyer's former transactions. This will afford one hundred per cent protection to exporters and give them the best possible foundation upon which to base credit extension. The slogan of the National Foreign Trade Council is "Greater Prosperity Through Greater Foreign Trade."

The success of foreign trade depends directly upon the extension of credit in foreign countries; and, in logical sequence, the success of credit, in order to reduce bad debt waste to a minimum, depends on adequate credit information. In order to put co-operation on a practical basis, in order that we may very definitely assist each other in credit work, I commend to the attention of every Pacific Coast exporter the advisability of affiliating himself with the Pacific Coast branch of the Foreign Credit Interchange Bureau, so that we may stand together for mutual protection and enlightenment and hasten the time when the Pacific Coast will take its place as the leading export section of the world.



CONTRASTS

Our two pictures here show the contrast between the old and new methods of handling lumber. Above is shown a Ross carrier spotting a sling load of lumber on a Columbia River terminal for a modern steamer. Compare this with the picture at the top of page 306. The picture at the right shows the first logging locomotive used in the State of Washington, compared with the latest logging locomotive as used by the Long-Bell Lumber Company.



WHAT THE IMPORTER HAS DONE

An Analysis of His Accomplishment in the Trade and Industrial Life of the Pacific Coast States

By J. T. STEEB



THE subject "What the Importer has done for Pacific Coast Trade," which has been assigned to me, is one that covers a multitude, not of sins, but of accomplishments, and I have during the past thirty-three years watched the development of this import trade with keen interest and often with wonder at its far-reaching effects. The Pacific Coast, as you know, is at a very great distance from the primary markets of the world, and is not a country of much immigration, although there are many nationalities represented here engaged in the development of the resources of this great country.

The importer occupies a peculiar position in the world of commerce in that it takes many years to establish proper connections in foreign countries and to learn what foreign products would be valuable and desirable in this country. And in doing all of this the importer has taken a very prominent part in the development of Pacific Coast trade.

Problems of Importer

The importer, of course, has many problems submitted to him. I remember years ago that real estate promoters, desiring to enhance the value of a town site near Seattle, decided to advertise the establishment of a steel plant on the property, and not knowing how or where to get any steel products approached an importer, who in turn was able to purchase for them in England a full cargo of such products. This material was placed on the property at a considerable expense, but it fulfilled the real estate company's advertisement as to their plans for the development of the property, and although the steel plant never materialized and the real estate company is now out of business, and this was an unusual incident, yet it shows to what extent the importer is called upon to develop trade.

The resources of the Pacific Coast consist principally of wheat, fruit, lumber, fish, and manufactured products of these raw materials and largely for export, and in my opinion the welfare of these commodities is considerably dependent upon the import trade, and so the business of an importer is extremely useful.

The manufacturer and producer engaged in the development of these resources, no matter in what line of endeavor he may be employed, demands certain material of foreign growth or production. His requirements come directly or indirectly to the importer with a view of securing, if obtainable, necessary materials or articles, ascertaining the place of production, the

cost, how and in what quantities such material can be purchased, and how deliveries can be effected. In this connection I might mention a few of the principal raw materials which are now being imported at the Pacific Coast and used here.

Vegetable oils, including wood, peanut, soya bean, and cocoanut, all from the Orient and variously used in manufacture;

Tin and rubber from the Straits Settlements;

Pig and other iron from Europe and also from India;

Antimony from China;

Copper, lead and iron ores from South America and the Orient;

Special steels and products thereof from Europe;

Chemicals from Europe;

Cement, coke, sand, chalk, newsprint papers, window glass, cork slabs from Europe;

Nitrate of soda for manufacture and for fertilizing, as well as other fertilizers from South America;

Jute cloth and wheat bags from India;

Hemp, mahogany and other lumber from the Philippines;

Hides from South America and Australia;

Wool from Australia and the Orient;

Kapok from the Orient;

Last, but not the most quiet, firecrackers from China.

The same situation prevails in the communities themselves, as the people require supplies for their living, their welfare, and their comfort, which may be secured for them from foreign countries, such as—

Furniture from Europe and China;

Straw mattings from the Orient;

Carpets and rugs from the Orient;

Carpets and linoleums from Europe;

Chinaware, glassware, and baskets from the Orient and Europe;

Electric lamps from Europe;

Flower and garden bulbs from Europe, Japan and other countries;

Boots and shoes from Europe;

Silks, piece goods, and clothing, brushes and other articles for personal use principally from Europe and the Orient.

I might also mention various food products which come here from various foreign countries, such as sugar, tea, coffee, peanuts, walnuts, cocoanut, eggs, rice, tapioca, cinnamon, all of these from the Orient;

Currants, sardines, herrings, olive oil, sauces from Europe;

Canned beef from South America;

Vegetables and seeds from Australia.

PACIFIC COAST IMPORTER

Pacific Coast trade has developed along rather individual lines. Having the finest stand of timber in the world, the Pacific Coast originally imported all of the timber for its dwelling houses. Being the country best adapted for raising food for human consumption, it originally imported all the food used within its borders.

In the interesting paper here reproduced, J. T. Steeb, president of the firm of J. T. Steeb & Company of Seattle, importers, told the Foreign Trade Council some of the accomplishments of the Pacific Coast importer in the development of his trade. Reading Mr. Steeb's paper, one realizes that the Pacific Coast is no longer a pioneer region.

For the farmer and dairyman come large quantities of stock feed and fertilizer of various kinds, copra meal, copra cake, bean meal, bean cake, bones and bone meal, and there are large quantities of copra, which is crushed for the extraction of oil.

During the war period many commodities destined to Eastern markets which never previously come through these ports arrived for transshipment, and with the knowledge that such commodities could be obtained direct at the Pacific Coast, the importer has been able to secure many additional and desirable raw and manufactured materials. Among them I might mention China wood oil, which is imported here direct from China and which is used largely by paint and varnish manufacturers, thus enabling them to market their products at competitive prices.

Developing Trade

Formerly most of the importations to the Pacific Coast were handled through concerns who sold merchandise for delivery only as inquiries were made to them and with prices accordingly, but now the growing import trade has resulted in the establishment of large and financially strong importing concerns in all of the principal cities, who are keenly alive to the necessities of the people of the Pacific Coast and who are continually endeavoring to develop import trade. That their efforts are successful is evidenced by the continued increase in imported commodities of all kinds.

While we of course are desirous of protecting the interests of the American producer and manufacturer, yet as a people we are entitled to secure our needs at competitive prices, and I believe few will dispute the statement, viewing the subject in a broad way, that the importation of such needs must have a wholesome effect upon domestic markets, tending to act as a check or safety valve upon prices and values, preventing exploitation of certain essentials for their welfare, and has no doubt its effect upon that much discussed subject, "The high cost of living." As an instance I might mention that China peanuts could not be imported as long as the price of those produced in this country remained below a certain level, but when this level is exceeded, foreign nuts can be advantageously brought in and their use in the manufacture of food products can be undertaken at reasonable prices; also the wholesaler of domestic peanuts finds that the imported nut is desirable and necessary.

The importer therefore has established himself in

a line of business essential to the prosperity of the Pacific Coast, having for his object the securing of certain desirable supplies for use in this particular section, and has opened up the world markets at competitive prices to the people of the Pacific Coast, a benefit and an advantage no other way obtainable.

The growth of trade through the importation of raw and other materials for use in manufacturing, farming, lumbering, fishing, and fruit growing and packing has very considerably helped the steamship lines, the dock companies, the railway companies, and, of course, the Government itself through large payments for duties, and we do not want to forget that in order to handle the import trade it has been necessary for the banks to cooperate in the development, through being called upon to assist in the arranging of proper facilities for the establishment of credits and the negotiation of drafts, etc., this feature being looked upon by the banks as a very desirable and profitable part of their business.

As indicated, the development of import trade assists in the development of export trade, not only in bringing to the manufacturer material which he manufactures and then partly exports, but also in connection with ocean freight rates, as lower rates are obtainable for the movement of export commodities when steamers can return to the Pacific Coast with import commodities, thereby securing cargo both ways. This again leads to the result that the Pacific Coast consumer is able to secure material in suitable quantities owing to the establishment of regular steamship lines, without the necessity of requiring large capital to be tied up in excessive stocks in warehouse.

Prior to 1900 it was seldom that other than sailing ships came to these ports, and they brought little if any cargo, but came largely in ballast to secure export cargoes, principally wheat, flour, and lumber. That the importer has done much for the Pacific Coast trade is easily evidenced by the many regular lines of steamers coming from all ports of the world, the tramp steamers coming with full cargoes, and the millions of dollars which have been invested in port facilities to take care of this enormously increasing import trade. I believe that even now Pacific Coast import trade is only in its infancy, and must be recognized more and more as a very important factor in the growth and development of this section of the United States.

A PIONEER TRADING SHIP

Here is shown an interesting illustration of the pioneer steamer of the Pacific Northwest, the Beaver, some of whose bones are still pointed out at low water near the entrance to Burrard Inlet. The Beaver had many an interesting adventure in early trading expeditions for the Hudson Bay Company. She was built in 1835 and operated in and around Puget Sound until 1888. When this sturdy, paddle-wheel tub is compared with the palatial Pacific coast-wise steamers of today and it is realized that only thirty-seven years have elapsed since she was considered a proper boat for carrying passengers between Puget Sound ports, one gets a very vivid conception of the rapidity with which Pacific Coast marine standards have progressed during the first quarter of the Twentieth Century.



THE PORT OF MANILA

Distributing Center for United States Products in the Orient

By E. C. EARLE

Port Works Engineer, Port of Manila—Vice-Chairman, Manila Harbor Board

AMERICA'S farthest-flung commerce base, the Port of Manila, is centrally situated with reference to the great markets of the Orient, at the head of Manila Bay, approximately thirty miles from its entrance and at the mouth of the Pasig River. Twenty-five years ago the port consisted of little more than an open anchorage. Today it has a well protected harbor, deep anchorage, and well-equipped piers and wharves at which the largest vessels plying the Pacific may berth and rapidly discharge or load cargo with up-to-date cargo handling equipment. It is the principal entry port and chief commercial center of the Philippines, a group of tropical islands of approximately 115,000 square miles of territory, rich in agricultural and timber lands which produce, in large quantities, cocoanuts, coconut oil, copra, hemp, sugar, tobacco, fine hardwood products, lumber, and rubber—all for export. The islands are inhabited by 12,000,000 people. The population of the port is 300,000.

Annual imports are heavy, including machinery, sugar mill and railroad supplies, agricultural implements, electrical, steam, and oil engine equipment, as well as practically all products of American manufacture, including common food stuffs.

As a trade center in the Pacific, the Port of Manila is ideally situated for the distribution of American products to the great markets of the Orient. Within the short period of a decade it has assumed a position of great importance to American commerce in the Far East, and is rapidly becoming the storehouse of and transshipping center for American manufactures. American business is no longer required to maintain, at considerable expense, large stocks of material at numerous Oriental ports, as heretofore, but may now make direct shipments to Manila where stocks may be concentrated and whence orders for Oriental customers may be executed in from two to six days as against thirty to forty-five days from distant America. Regular sailing schedules are maintained by lines operating from Manila to Amoy, Hongkong, Saigon, Calcutta, Madras, Colombo, and to Singapore, as well as to the Japanese ports of Batavia, Surabaya, and Sandakan. A regular service is likewise maintained between the Australian ports of Sydney, Melbourne, and

Auckland, and between Shanghai, China, and the Japanese ports of Nagasaki, Kobe, Moji, and Yokohama.

The Port of Manila offers a service to overseas shipping unsurpassed by any port in the Orient. It is served by an extensive rail system on Luzon and by a number of inter-island steamship lines operating approximately 75 vessels. This service insures prompt distribution of imports and makes the Port of Manila the export center for the country's products.

Numerous bonded warehouses provide ample storage space for all classes of cargo at low rates. Several large warehouses are situated in the immediate vicinity of the piers. Private and insular - owned refrigerating and cold storage plants are maintained for public use.

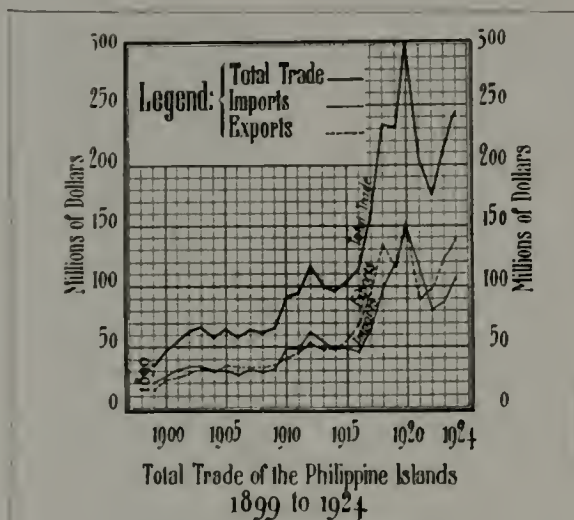
Harbor

The Pasig River flowing into Manila Bay divides the waterfront of the Port of Manila into north and south port districts. Manila Harbor is situated in the south district, where all efforts at development and improvement have been concentrated. The harbor consists of 1250 acres of anchorage, protected by 10,000 feet of rock breakwater. Approximately 7000 feet of berthing space are available at the four government-owned piers and bulkhead wharfage in the harbor, sufficient to permit the berthing of ten large trans-Pacific vessels. Additional berths will be made available during this year and in 1926, when more wharfage along the bulkhead will be commissioned. The average depth of water within the approved anchorage area is 30 feet at zero tide. This depth is maintained by regularly dredging to 32 feet. Preparations are under way for dredging the entire harbor to 40 feet next year. The maximum range of tide is 5.2 feet, or from minus 1.1 feet to plus 4.1 feet. This small range

facilitates cargo handling at the piers considerably. Entrance to the harbor is marked by channel buoys and light beacons.

Vessels berthed within the harbor may load and discharge cargo throughout the entire monsoon season without difficulty and, except for short periods of heavy weather during the passage of a storm, can be safely worked throughout the year.

New harbor improvements embodied in the Insular Government's proposed program for the improvement of Manila Harbor in the south district will cost \$20,-

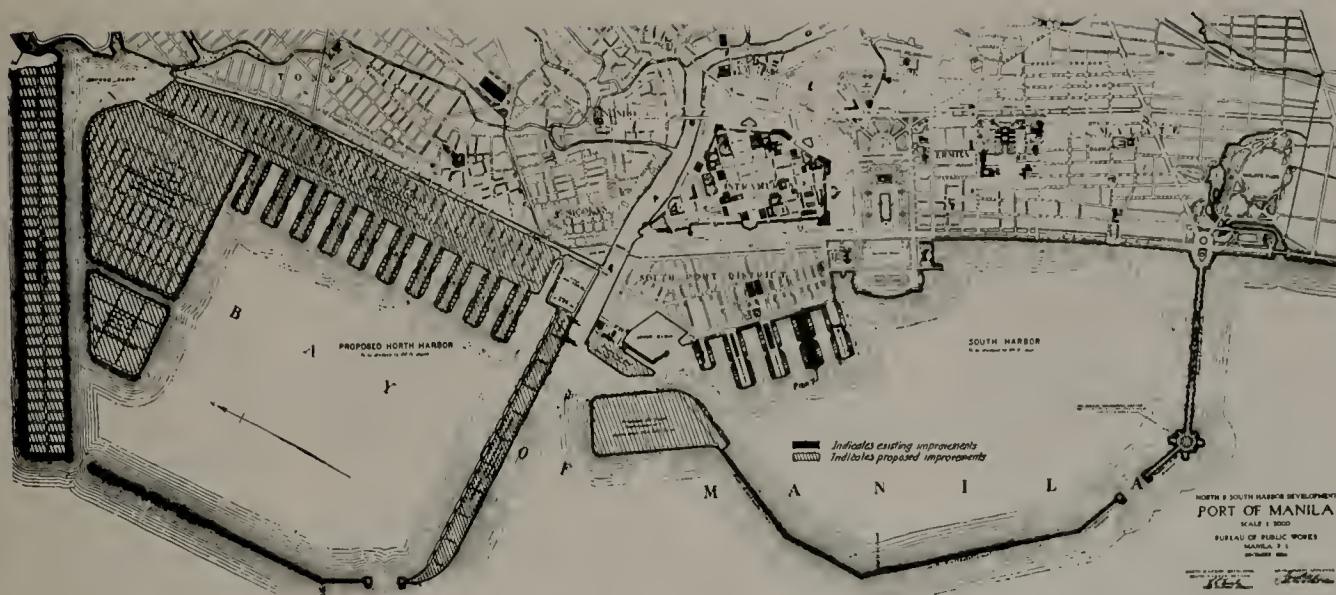


PHILIPPINE COMMERCE

Two generations back, the Philippine Islands were quite unknown commercially in the markets of the world. The volume and value of the islands' import and export trade were then so small as to be negligible. Even the rich agricultural and industrial possibilities were unappreciated by Occidental peoples prior to the present generation.

During the period of American sovereignty (1899-1925), the Philippines have become a very real and considerable factor in world trade. From a total foreign commerce value of only thirty-five million dollars in 1899, the import and export trade has grown to date to nearly a quarter of a billion dollars annually. A thousand steamships now arrive each year from foreign ports, bringing manufactured articles for Philippine consumption to the value of one hundred million dollars.

In less than a quarter of a century the inhabitants have been awakened from a condition of lethargy and period of relative unproductiveness to become real and potential factors in the consumption of the products and manufactures of America, and in the production of ever increasing quantities of both raw products and manufactures, including hemp, sugar, copra, copra meal, cocoanut oil, desiccated and shredded cocoanut, cordage hats, tobacco, cigars, maguay, and rubber, which are vital to the necessities and well-being of the people of America and every foreign land.



The Manila Harbor Board in laying out improvements for the Port of Manila is figuring for large business in a large way. Ample provision is being made for material handling machinery, both alongside ship and in the shed. This is shown by two views reproduced herewith of the newly opened Pier No. 7 of the new south harbor works. One very noticeable feature which will commend itself heartily to passengers is the movable gangway bridge communicating with an upper outside gallery, by means of which passengers can go to or from the ship without climbing over and around the freight in the pier shed. Inside the shed many overhead cranes are fitted, the whole being calculated to give the best possible dispatch in the unloading and loading of steamers.





Map showing the strategic position of Manila as a distributing center for the Orient.

000,000 and will include the construction of additional piers, the reconstruction and enlargement of existing piers, the construction of marginal wharves,

cargo sheds, an oil and coal depot, the extension of the breakwater, and the deepening of the harbor to 40 feet. The first of the large terminal structures (Pier No. 7) contemplated under this program, was commissioned July 7, 1924.

Pier No. 7

This new structure is one of the finest marine terminals on the Pacific Ocean and will have a berthing capacity sufficient to accommodate four of the largest type of vessels plying the Pacific, such as the Empress of Canada and the President steamers. The structure is 240 feet wide and 1400 feet long. It is provided throughout with improved and up-to-date cargo handling equipment. The exterior equipment consists of a number of large semi-portal electric gantry cranes of 5 and 15 tons capacity and a 50 ton locomotive crane for handling cargo between ship and pier.

Within the transit shed a flexible system of 2 and 3½ ton overhead electric rapid hoisting and stacking cranes has been installed. Industrial trucks, tractors, and trailers are used to rapidly relieve the apron of freight.

In addition to the equipment and facilities above mentioned, the pier has a spacious waiting room and other conveniences for the use of passengers, as well as a large baggage examination room. A novel feature of the new pier is the overhead passenger passageway which run along the outer edges of the transit shed at the second level. The use of this passageway enables passengers to reach the ship's deck without the necessity of passing through the more or less dangerous areas utilized for the loading, unloading, and storage of freight. Ship's decks are reached by ascending the stairs on either side of the waiting room in the pier head or by using the elevators situated adjacent to the baggage room, thence by passing through the overhead passageway. A movable bridge connects the passageway with the deck of vessel.

EUROPE AND NEAR EAST

FEARs of European competition in manufactured goods were classed as groundless by Francois de St. Phalle, vice-president of the Baldwin Locomotive Works, speaking before the Foreign Commerce Section of the annual meeting of the United States Chamber of Commerce.

"Ever since the post-war deflation," said Mr. St. Phalle, "considerable fears have been entertained in certain quarters of incoming European competition, particularly in manufactured goods, due to the great cheapness of European labor. Even at the height of currency depreciation in Europe and therefore cheapness of European wages, this competition did not materialize. The outstanding fact is that the United States is the only great power now enjoying a foreign trade substantially higher than in 1913, not only in money but in volume of goods. The exports of the United States to Europe are quite prosperous, including manufactured goods, and are increasing. Trade figures issued by the Department of Commerce in Washington must dissipate the fears and theories of those who felt that our industries would suffer from European competition.

"This indicates that the much higher level of wages

prevailing in the United States is fully balanced by the specialization resulting from the large home market, superiority of tool equipment and management. It does not follow that all articles of American manufacture can be exported to Europe, but it does follow that a sufficient number of American products can sell in Europe to fully insure American trade balances. A great asset of American exporters is the ingenuity and labor saving features of American products, constantly fostered in the United States due to the high level of wages prevailing, which makes it ever necessary to economize labor. Once developed in the market of highest wages, these devices have a ready sale in other fields where wages are not so high, particularly in Europe. Another great asset is the capacity to produce quickly and in large volume. Foreign business is often subject to procrastination and delay which, as a consequence, frequently makes it necessary for European countries to avail of American productivity even at a higher cost.

"The requirement for sales in Europe is to specialize on suitable products and, if they may become obsolete, replace them with new ones suited for the markets."

REBLADING AND BALANCING TURBINES ON SHIPBOARD

By COMMANDER C. S. McDOWELL, U. S. N.
Engineer Officer, Mare Island, California

THE usual practice at navy yards is to send a damaged turbine rotor to the machine shop on shore for reblading. There are times, though, when such a practice is not very feasible and the recent reblading of a high pressure rotor and casing of the U. S. S. Cincinnati at the Mare Island Navy Yard is an example of such a situation. The Cincinnati had come around with the Scouting Fleet from the East Coast and while maneuvering off San Diego had damaged the high pressure turbine on number four shaft (outboard port shaft). Preliminary examination was made at San Diego of the damaged turbine and it was found that a number of rows of both the rotor and stator blading were so badly damaged as



View in the engine room of the U. S. S. Cincinnati, showing upper casing removed and stowed out of the way. This illustration gives a graphic idea of the close quarters.

to require renewal. As a result of this preliminary examination, the Bureau of Engineering in Washington immediately ordered blading material from New York and Philadelphia for shipment to Mare Island. In the meantime the Navy Yard was notified that the Cincinnati was proceeding to Mare Island to arrive on March 24.

On the arrival of the vessel at the yard, the high pressure turbine was opened up for thorough examination and it was found that four rows of blading in the intermediate and low pressure stages of the rotor were so badly damaged as to require renewal, and that five rows of fixed blading in the similar stages of the casing would need replacement.

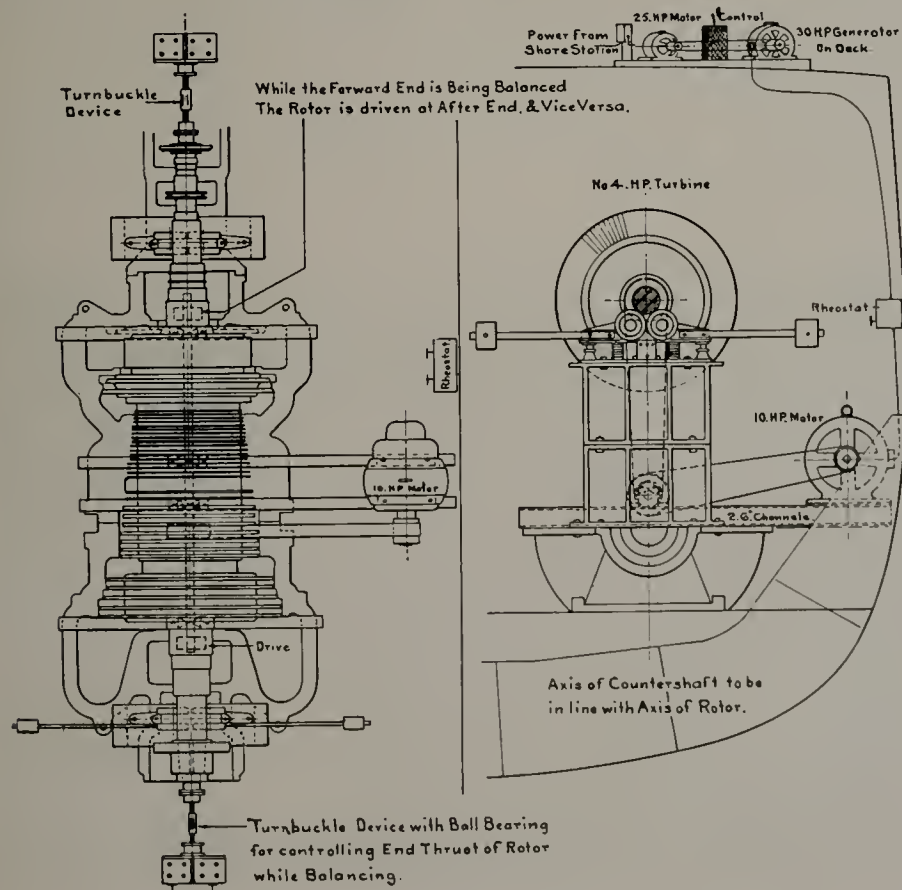
The Navy Yard received instructions on March 25 to proceed with the repairs and endeavor to complete them by April 15, in order that the Cincinnati might sail on that date with the fleet for Honolulu. Information was received at this same time that blading material was going forward from New York by express and might be expected on March 30.

The job, as it lined up, consisted of cutting out and replacement of blading in the high pressure turbine and the replacement of shrouding on one impulse wheel, the dynamic balancing of the rotor, and the examination and repair, as found necessary, of the low pressure turbine. The condition of the low pressure turbine was not known, but it was felt that only small particles from the high pressure turbine had carried over so that cleaning and straightening of blades would only be necessary.

It is not intended in this article to discuss at any length the subject of dynamic balancing of rotating parts, but it may be stated that it was considered absolutely necessary to so balance this rotor in order to have a satisfactory job.

Estimating the Job

Based on the assumptions made above, as to conditions of low pressure turbine and the date of arrival of new blading material, it was estimated that the decks could be cut away and interfering piping and apparatus removed, rotor taken to shop,



Diagrammatic sketch showing the arrangement of machinery for the balancing operation.



Reblading work on the high pressure turbine rotor.

reblading completed, rotor balanced on machine in the shop, turbine re-assembled, decks replaced and riveted, and final tests held by April 28. The time estimates contemplated working three shifts on controlling jobs with Sunday work excluded.

Two decks had to be cut away in order to get the turbine out of the ship and then after completion of repairs these decks and displaced equipment put back. This procedure would cause a delay in getting shop work started, would seriously interfere with the peace and comfort of the crew, and then decks could not be replaced until the turbines were finally closed up on account of the danger of getting material in the turbine.

Preliminary Investigation

The whole fleet at this time was simulating war conditions and the yard felt that some other solution of the job must be found. A preliminary investigation of the possibility of doing all the work, including balancing, on shipboard did not show any insurmountable difficulties. A careful checking of the spaces available for the different operations was made and it was found that the casings could be taken care of, rotor blocked up on rolls, balancing equipment installed, etc., and still give enough room for the work to be carried out. The various steps in the procedure were then analyzed, the order of procedure outlined, and the

length of time and men required for each determined. It was estimated that, using the same assumptions as to condition of low pressure turbine and date of arrival of material, the complete job could be done on the ship by April 17, or eleven days quicker than if the rotor was removed to the shop. The estimated labor cost of the job if done in shipboard was only a little over half of the estimated cost of doing the work in the shop.

Work on Ship

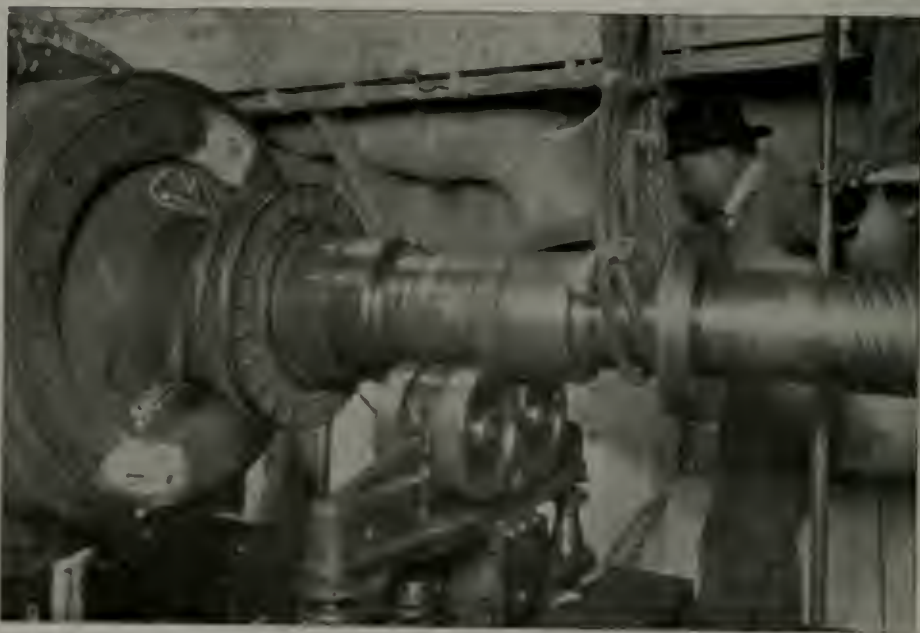
It was determined as a result of

this investigation to do the job on the ship and work was started on March 25.

The first step in the scheduled order of work was the determination of the condition of the low pressure turbine; this work was laid out to be completed prior to arrival of the new material for the high pressure turbine. The damaged blading in the high pressure turbine was being cut out at the same time as the bolts in the exhaust trunks and low pressure turbine casings were being removed. The work of cutting out the damaged blading, though, could not be completed at that time, as it was necessary to lower the upper half of the high pressure casing in order to protect the high pressure rotor and provide room for stowing the large sections of exhaust trunks.

By the forenoon of March 27 the upper casing of the low pressure turbine had been lifted clear and the rotor raised for examination. It was found that a large number of blades had been nicked by small particles of high pressure blading material and that a few blades were slightly bent, but no reblading was necessary. The bent blades were straightened, the casing thoroughly cleaned out, and the rotor lowered in place.

On the next day, March 28, the upper half of the low pressure casing and exhaust trunks were replaced and work started of bolting them up. The clearance of the low pressure rotor was checked and the main bearing caps replaced. On the same day the high pressure upper casing was lifted and placed in an



View of one end of the rotor on the balancing machine.

inverted position forward of the reduction gear ready for reblading.

On Monday, March 30, the high pressure rotor was raised approximately eight feet above the lower half of casing and a staging rigged for supporting the rotor. The rotor was then landed on roller bearing rolls, and the cutting out of the remaining damaged blades was carried on simultaneously on the rotor and two halves of the casing. The work of cutting out blades was finished by 4 p. m. the same day, but the first shipment of new blades did not arrive until the following morning, so that a delay at this point of about sixteen hours was experienced.

Reblading

The actual reblading was carried out without incident, four machinists and two helpers being employed on the day shift and three machinists being used on each of the night shifts. The last shipment of blades arrived on April 4 and all work in connection with the reblading of the rotor was completed on April 6.

Prior to completion of the reblading an Akimoff balancing machine was taken from its regular foundation and set up in the shop with necessary shafting, motors, etc., under the same conditions as would exist on the ship. Much time in final setting up the balancing equipment on the Cincinnati was saved by this procedure.

Balancing Apparatus

For the foundation of the balancing machine four cast iron parallels, or raising blocks, 24 inches high by 36 inches long, were used. Two of these blocks were drilled to suit the flange of the lower half of the turbine casing and the other two were drilled to suit the rolls of the Akimoff machine. Two of these bars were then bolted together, giving one set for each end of the turbine.

The set up and equipment for rotating the rotor is shown in Fig. A. Two steel channels were bolted athwartship to the horizontal joint of the lower half of the casing and extended to the skin of the ship. A 7½-horsepower direct current motor was bolted to these channels. A counter shaft of sufficient length to permit belting to either end of the rotor was supported on additional channels directly under the rotor.

The yard was fortunate in its balancing machine equipment in that either end could be used as the sensitive end, so that it was not necessary to turn the rotor end for end while balancing.

The thrust for the forward end of the rotor was taken by a steel

bar, 1 inch by 4 inches, one end bolted to a ship's frame and the other to a flange of the main steam line. The thrust for the after end was taken by upright channel bars and brace supports to the reduction gear casing. The power for the 7½-horsepower motor was obtained from a motor generator mounted on the upper deck with Ward-Leonard control. Communication between the operator at the balancing machine and the operator of the motor generator was maintained by means of telephone.

Balancing

While the balancing equipment was being set up and preparations made for balancing, the Cincinnati was placed in drydock afloat, clear of the blocks. This precaution was taken in order to secure perfectly still water during balancing and prevent any false readings.

The actual balancing was started on the morning of April 8 and completed the same day, approximately fourteen hours being required for balancing. In order to correct the dynamic unbalance of the rotor, it was necessary to add 2.6 ounces on the forward end of the rotor and 15.7 ounces on the after end.

In installing blades in rotor and stator each blade was checked for length by means of blade gauges, but as an added precaution before final assembling wax was poured in the stator between fixed rows and the rotor lowered and rotated. The rotor was then raised and thickness of wax measured with micrometers.

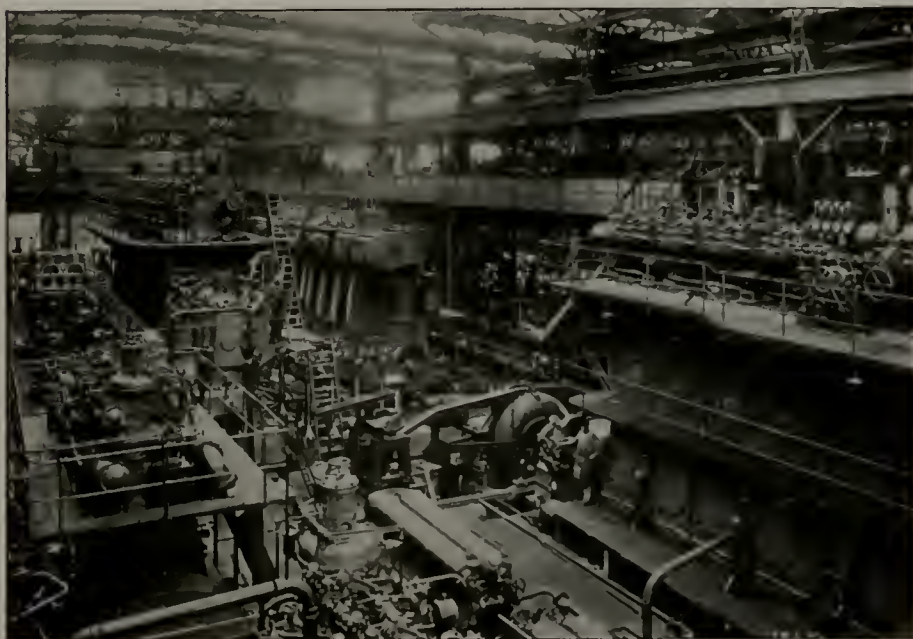
Assembly

The final assembling of the high

pressure turbine, including setting rotor and thrust clearances and installing piping, brackets, hangers, operating gear, gratings, ladders, clothing, etc., was completed before midnight, April 11, and yard force taken off the vessel. On Monday, April 13, the Cincinnati held a satisfactory dock trial and then proceeded to join the fleet, then in San Francisco Bay.

It will be noted that the navy yard's original estimated date of completion of the work was April 17, while the work was actually completed on April 11, or five working days in advance of estimate, even though nearly a day was lost waiting for blades. The ability to so materially better the estimates was due to the very excellent spirit shown by everyone connected with the job and the co-operation between the different shops and trades. Every man concerned with the work was as much on his toes as if he had been playing in the World's Series. It may also be noted that the actual labor costs of the job were about 15 per cent under the estimates.

As a result of the experience on this reblading and balancing job, it is felt that this is an entirely practical procedure even on larger installations than the Cincinnati's. Of course it is desirable to reblade and balance a rotor in the shop if the rotor can be readily removed from the ship without cutting decks or other difficulty, and if the cost of doing the job in the shop is not in excess of doing it on shipboard. On the average merchant vessel, though, there is more space available.



View on the erecting floor of Sulzer Bros. diesel engine work, Winterthur, Switzerland, showing five large engines in course of erection or under test.

MARINE OIL ENGINE AND MOTORSHIP PROGRESS



The offices and shops of the Pacific Diesel Engine Company Oakland, California.

THE MANUFACTURING PLANT BEHIND THE PACIFIC DIESEL ENGINE CO.

FEW manufactured products present such difficulties or such exacting requirements in the arts of the metallurgical laboratory, the foundry, and the machine shop as does the large powered marine engine working on the full diesel principle and guaranteed to burn heavy oil with perfect combustion and minimum consumption of fuel. Many European firms of long experience in the manufacture of gas and steam engines have met failure in trying to solve these difficulties and meet these requirements. Whenever, therefore, a shipowner is looking for a diesel prime mover of large power, the low bidder must show that his bid and guarantee are backed by knowledge, by experience, and by equipment.

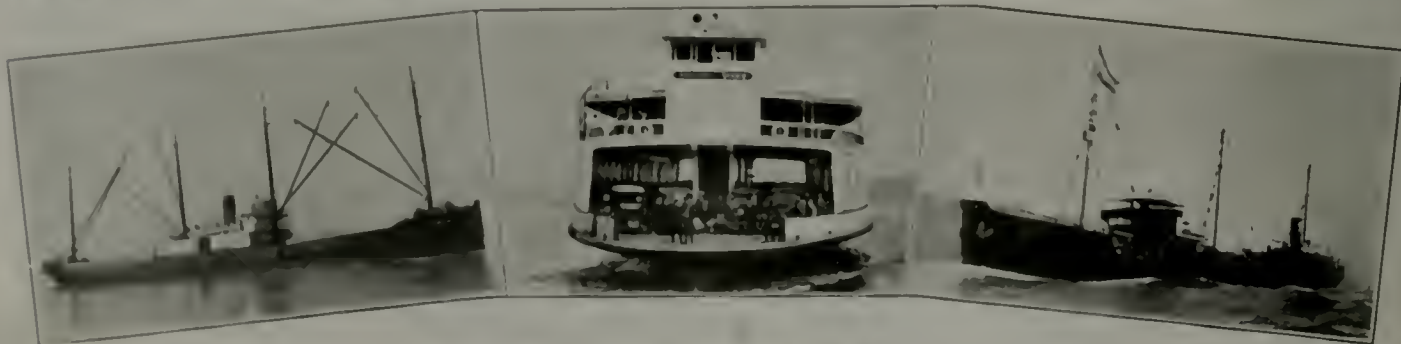
Some of our Atlantic Coast readers have raised these questions concerning Pacific Coast manufacturing plants in general, and more particularly concerning the plant of the Pacific Diesel Engine Company of Oakland, California, who have recently been awarded contracts for a large number of diesel engines from the United States Ship-



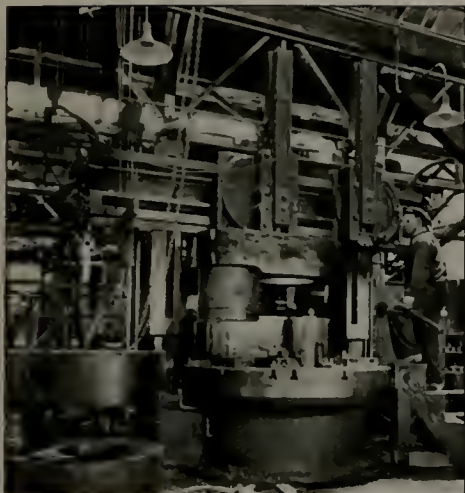
Large fly wheel for stationary diesel engine generating set in shops of Pacific Diesel Engine Company.

ping Board, the contracts including two engines to produce 2900 brake horsepower each at 95 revolutions per minute with a mean effective pressure of about 90 pounds per square inch. These engines will have a bore of $31\frac{1}{2}$ inches by $51\frac{3}{16}$ inches stroke and will have 8 cylinders. They are very large engines, as far as American marine practice goes. So a natural question arises in the minds of many shipowners, "Is the Pacific Diesel Engine Company adequately prepared in plant and personnel to turn out satisfactory engines of this size?" Pacific Marine Review, after an intimate acquaintance with this organization covering seven years and after recent inspection of the enlarged plant, answers this question with an emphatic affirmative.

The Pacific Diesel Engine Company is not only prepared to build these engines, but already has the greater portion of the parts finished and is beginning erection in the shop, and we are sure that the results will show a prime mover which is the equal of anything yet installed in a motorship.



A tanker, a freighter, and a ferryboat equipped with Pacific-Werkapoor diesel engines. They are, reading from left to right, the freighter Frank Lynch, the tugboat Golden West, and the tanker H. T. Harper.



Upper left: boring crank webs; upper right, turning connecting rod on a 2900 B.H.P. Pacific diesel engine.



The Pacific Diesel Engine Company's engineering staff, backed by the long experience of Werkspoor of Amsterdam, produces its own designs, builds its own patterns, controls its own grey cast iron mix for pouring into its own molds from its own cupola in its own foundry. Thus perfect castings of iron, especially adapted for columns, cylinders, liners, pistons, and piston rings are assured.

As will be seen from the illustrations accompanying this article, the shops of the Pacific Diesel Engine Company are equipped with the very finest machine tools that America can produce. The tool room is especially designed and equipped to take care of the production of all jigs and special fixtures needed, and the manufacturing department turns out engine parts in multiple on an interchangeable basis working to very fine tolerances on standard gauges.

The erecting floor and test stand are based on a sturdy rein-

Below: erecting department for large engines.



Above, manufacturing department; below, heavy lathe department, Pacific Diesel Engine Company.

forced concrete foundation with large area of iron slab and can take care of a large number of small and large engines. A Fronde dynamometer of the most modern type is used in the large engine testing department. As the weight of the 8-cylinder 2900 brake horsepower engine is 878,000 pounds, including auxiliaries, it will be realized that a strong foundation and ample room are required for a thirty-day non-stop full load run of such a machine.

One of the pictures shows a vertical boring mill working on the crank webs for this engine. There are eight of these cranks on each engine shaft and the complete crank shaft weighs 30 tons. The bedplate for each engine weighs 65 tons. All these heavy parts are handled easily by cranes and are machined in the shop of the Pacific Diesel Engine Company with great precision.

Many engines of small, large, and medium sizes have been built in this shop, and many ships equipped with these engines are performing satisfactorily in commercial marine work. Among them may be mentioned the cargo car-

Below: erecting department for small engines.

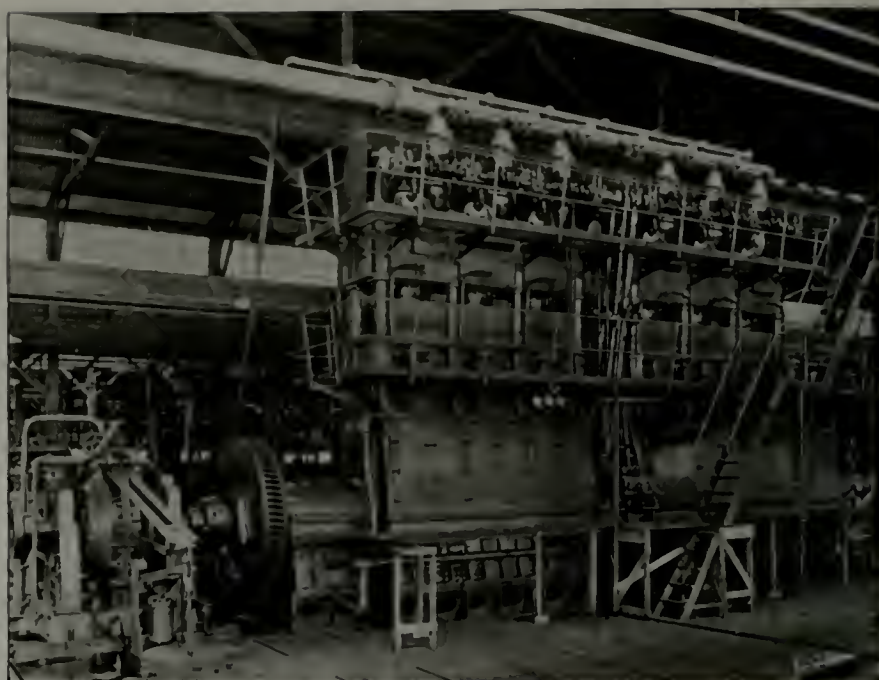


rier Frank Lynch, the tankers H. T. Harper, Charlie Watson, Alaska Service, Hawaiian Service, Standard Service; the ferries Golden Gate and Golden West; besides numerous auxiliary generating sets aboard ships.

The United States Shipping Board order, on which this shop is now busy, consists of two main propelling units of 2900 brake horsepower, or 3445 indicated horsepower, each, with bore, stroke and speed as already stated. These engines are to have a test run on the stand of thirty days non-stop at full rated load, and of 6 hours at 15 per cent overload, at all times showing clear exhaust and not consuming above 0.42 pound of fuel per brake horsepower hour. In addition to these engines there are four auxiliary engines to drive air compressors for starting, maneuvering, and injection air. All these are for installation on the two Shipping Board freighters West Harts and West Hartland.

Subsequent to receiving the above contract, the Pacific Engine Company was awarded a contract for 22 engines to drive auxiliary generators, each combined set to be of 75 kilowatt capacity at 240 volts direct current.

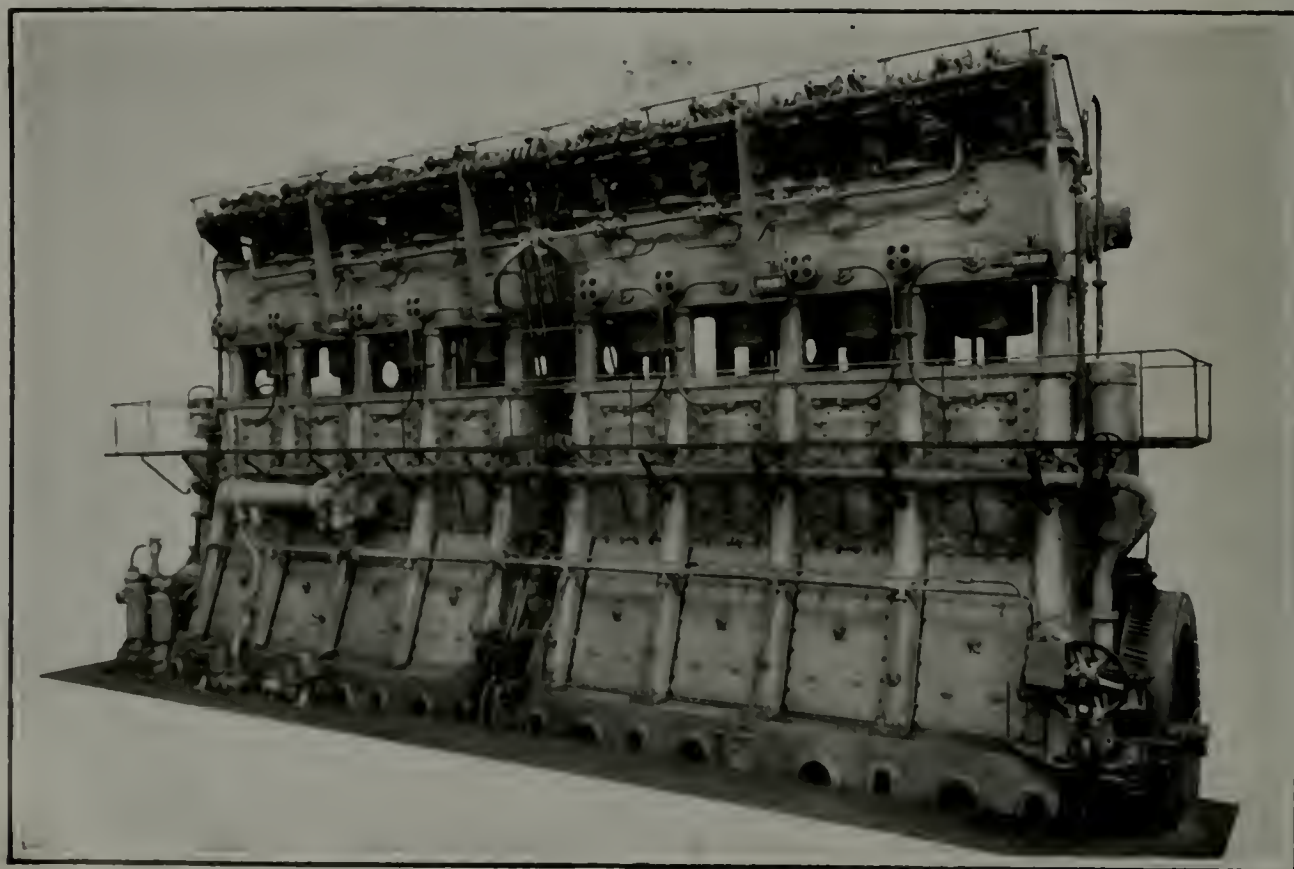
After these engines have been erected and tested in the shop, they will be disassembled in units suitable for shipment, boxed, and shipped to points designated by the Shipping Board, where they will be installed in the vessels chosen by the Shipping Board for conver-



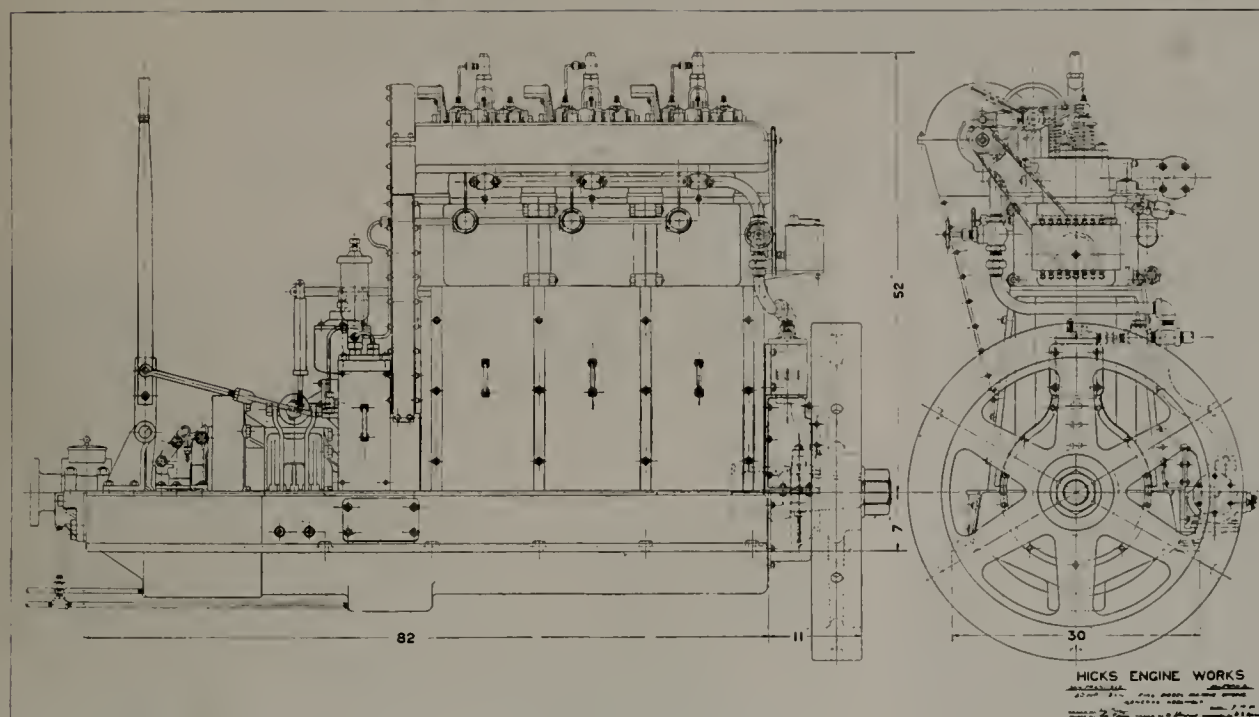
The above photograph is that of a 1000 brake horsepower Pacific diesel engine on test stand.

sion to motorships. The Pacific Diesel Engine Company's plant is admirably located for this purpose, having deep water right alongside and transcontinental rail spur track connection.

Yes, the manufacturing plant behind the Pacific Diesel Engine Company is well able to produce a good diesel engine up to the largest commercial sizes in American marine use today, and when larger sizes are built Pacific Diesel will build them.



Above is a 2900 brake horsepower diesel building by the Pacific Diesel Engine Company for the United States Shipping Board.



Side and end elevations of a 3-cylinder, 50-horsepower Hicks full diesel engine fitted with disc clutch and reverse gear for marine installation.

THE HICKS DIESEL ENGINE

FOR twenty-five years the fishermen of California have recognized the value of the internal combustion engine in deep sea commercial fishing. This fact is due in large part to the efforts of The Hicks Engine Works of San Francisco in developing a heavy duty marine type gasoline engine which meets the very exacting requirements of the Pacific Coast fishing industry.

California's fishermen follow the runs of fish from San Diego to Crescent City. They fish for many varieties, and each variety requires a special method for best results. The most profitable and interesting variety is the salmon. For this fish the method is trolling at low speed. This demands an engine which will work at from one-fourth to one-sixth its rated speed for hours with steady dependability and drive the heavy boat on smooth or choppy waters or over the long Pacific swells against the northwest trades.

Hicks developed such a gasoline engine and made it so good that fully 90 per cent of the California fishing fleet of salmon trolling boats are Hicks equipped. Special cylinder and piston design, combined with painstakingly perfect workmanship and service made the Hicks engine standard for the fishing boat.

Early in 1924 The Hicks Engine Works determined to produce an engine of the full diesel type, burning heavy oils, which would show the same dependability on slow speed work as had been demonstrated by their gasoline engine. After eighteen months' work and after exhaustive shop tests, they are now announcing the Hicks full diesel engine and are making a first installation in a fishing boat for the Del Monte Fishing and Packing Company of Monterey.

The engine is a 3-cylinder unit of 4-cycle solid injection type, rated at 50 brake horsepower and equipped with Hicks dry disc clutch and reverse gear. It

has a number of special features making for dependability and ease of handling. One of these features is the Hicks fuel valve construction, which gives a very delicate control of the needle valve lift and at the same time is so simple and compact that by loosening one nut the complete fuel valve assembly may be removed for cleaning or adjustment. This may be done on any one cylinder while the engine is in operation—a valuable feature at sea.

The governor has been ingeniously designed so as to insure very close engine speed regulation, controlling the quantity of injected fuel from the fuel pump, which is also of Hicks design. Fuel is injected into the cylinders under from 3000 to 4000 pounds pressure per square inch, and the fuel pump has shown no signs of any leak and responds very delicately to the action of the governor, giving perfect combustion at all speeds of the engine. As will be seen from the illustration, an overhead cam shaft is used to actuate the valves. The valves are seated in easily removable cages and are ground to perfect fit. The cylinder heads are integral with cylinder bodies and are very carefully designed to care for heat stresses and to give a true cylinder bore at all conditions of operation, thereby preserving compression uniformly over a very wide range of operating temperatures. Each cylinder is a unit in itself.

A cylindrical skirt guide is bolted to the bottom of each cylinder block, so that by removing the skirt nuts the piston may be easily removed for examination, cleaning of rings, or replacement without disconnecting the connecting rod from the crank shaft and without disturbing cam shaft or valve assemblies.

Steel tie rods through the columns take the tensile strains and keep the cast iron structure always under compression.

(Continued on page 330)

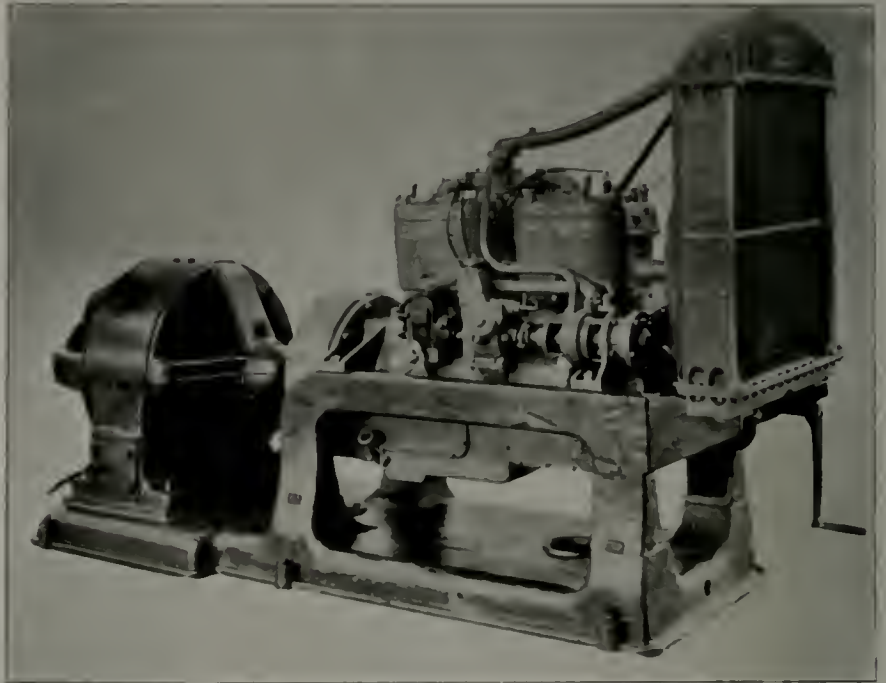
AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

CLIMAX GENERATING UNIT

THE Climax Engineering Company of Clinton, Iowa, manufacturers of Climax internal combustion engines and Climax self-contained refrigerating units, are manufacturing for marine and industrial uses a self-contained gas engine driven electric generator unit, which has many features that and as an emergency auxiliary lighting set.

As will be seen from the illustration herewith, the unit consists of a 4-cylinder gasoline engine, automobile type radiator, and special fly wheel, flexible coupling, driving through direct connection a standard make of generator mounted on the same bedplate as the engine.

The engine is the Climax Trustworthy 30 to 40 horsepower, heavy duty tractor and power shovel engine. This engine operates at 600 r. p. m., and being designed primarily for power shovel work is adapted to run at various angles, so that it would be unaffected by ship's motion. The engine unit is completely equipped with high tension magneto, governor, Stromberg carburetor, starting crank, and all accessories except the gasoline tank,



A compact gasoline engine drive generator built by the Climax Engineering Company.

which ordinarily has to be built to suit the particular installation.

The generator can be either a 10 or 15 kilowatt of any standard make, direct current 110 to 220 volts.

The unit is not excessively heavy,

but is sturdy enough to stand up under all conditions, and has demonstrated its ability in many hundreds of installations as a tractor and shovel engine in practically every part of the United States.

NEW PORTABLE ACETYLENE GENERATOR

A SMALL generator for producing acetylene at low pressure for welding and cutting has recently been developed by the Oxweld Acetylene Company, 30 East Forty-second street, New York. This supplements a line of larger generators, a great many of which are used to supply pipe lines in shops where much cutting and welding is done.

The new generator, which takes 35 pounds of carbide at one charge, can be transported readily from place to place, thus providing a portable supply of generated acetylene gas. Empty, the generator weighs only 210 pounds.

An entirely new principle of feed control is used which might be called a heavier-than-water float. A vertical partition, extending nearly to the bottom into a water seal, di-

vides the generator shell. One side is gas-tight and contains the carbide hopper at the top. The upper part of the other side contains gas regulating and protective devices and an automatic carbide feed control. Generation of the first acetylene causes water to rise on this side of the partition high enough to all but submerge a pan full of water, hung to a control lever. This pan normally acts as a weight acting counter to a spring, but as the water rises about it, its apparent weight is diminished and the carbide hopper valve is closed by the action of the spring. As acetylene is drawn off, water rises in the gas compartment and correspondingly lowers under the float, relieves some of the buoyancy under the water pan, which, gathering weight with the receding water, depresses the

spring and allows a small amount of carbide to drop into the generator and restore equilibrium conditions.

Because of its low center of gravity, the generator rights itself when tilted at an angle of 30 degrees. It works perfectly at an inclination of upwards of 10 degrees. No adverse effects result if a generator while in operation is knocked over. Nearly all fittings are enclosed in the cylindrical shell and there is little, if anything, projecting which may be injured by a fall on a concrete pavement.

This generator has been submitted to the Underwriters' Laboratories, Inc., and has been listed by them as an acceptable device for installation on insured premises.

PRESCOTT TRACTORS ON PACIFIC COAST PIERS

FOR handling general cargo at steamship terminals, the Sumner K. Prescott Company of Seattle, Washington, build a gasoline worm drive model "Industrial" tractor that is proving to be a necessity to obtain the greatest degree of economy and efficiency. Working under average conditions, it will replace a large number of men, and records show several instances where the savings in unloading and loading one ship have been sufficient to cover the initial cost of the tractors used. Small but powerful, and of short turning radius, the tractor can be operated in small spaces and readily handle heavy loads. It is



The Prescott "Industrial" tractor as used on Pacific Coast piers.

fast on the get-away and is always ready for twenty-four hours' continuous operation if necessary.

The Luckenbach Steamship Company has twenty-one "Industrial" model Prescott tractors in operation on their terminals at San Francisco, Portland, and Seattle. Other steamship companies adopting them are the McCormick Steamship Company for their new dock at Portland and also at their Seattle terminals, Pacific Steamship Company, Matson Navigation Company, Dodwell & Company, Ames Terminal Company, East Waterway Dock & Warehouse Company, J. C. Hayden Dock Company, port commission docks at Seattle, Tacoma, Portland, and other important Pacific Coast shipping points.

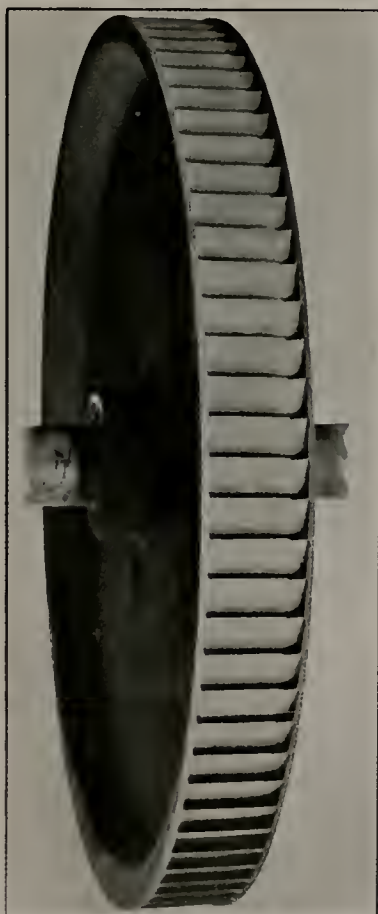
STURTEVANT STEAM TURBINES

B. F. STURTEVANT COMPANY have long enjoyed a well-earned and enviable reputation for durability and efficiency in the machinery markets under their name. Sturtevant generators, fans, and blowers, and Sturtevant steam engines to run them; Sturtevant reduction gears; and Sturtevant steam turbines are often found aboard good steamers and always they are functioning with ease and quiet effectiveness.

The Sturtevant steam turbine rotor is of the bucket wheel type. Its buckets are milled in the solid wheel. They erode very slightly and always present a sharp edge to the steam. Hence they perform over long full load periods without loss in efficiency or power.

The cut herewith shows one such rotor which, when the picture was taken four years ago, had been in constant use for eleven years. It was replaced in the turbine and has been in constant use the four years also. This is a typical wheel, only one out of over 12,000 in use. Mounted in oversize Sturtevant bearings, it gives practically unlimited service.

Sturtevant turbines drive pumps, generators, centrifugals, pulverizers, fans and blowers. They are made for operation with shaft either horizontal or vertical. Some are direct connected and some drive through Sturtevant gear transmissions. Sizes range from a fraction of a horsepower up to five hundred horsepower.



A Sturtevant steam turbine rotor after eleven years' constant service.

SOME RECENT BOOKS

Cugle's Practical Navigation, by Charles H. Cugle, author of "Simple Rules and Problems in Navigation." Published by E. P. Dutton & Company.

This book contains all the rules and problems in navigation used in every day work at sea, with all necessary material and instructions for working, as well as fully worked-out examples. It is strictly up to date and meets the changes in the 1925 Nautical Almanac made by the American, British, and French governments. The book deals with Deviations by Star, Moon, and Planet; Great Circle Sailing; the Double Chronometer Method of Determining Ship's Position; Construction of a Mercator Chart; Summer Tangent Method of Determining Ship's Position; Marcq St. Hilaire Method; and Extracts from the Nautical Almanac for 1925.

Around the Horn to the Sandwich Islands and California, by Chester S. Lyman, sometime Professor of Astronomy and Physics in Yale University, edited by Frederick J. Teggart, Associate Professor in the University of California. Published by the Yale University Press. Price \$3.50.

This is the unadorned text of a private journal kept by Mr. Lyman, when as a young man he embarked from New York in October of 1845 on the *Mariposa*. The vessel called at Valparaiso, Callao, Lima and the Hawaiian Islands. Later he made the journey to the Golden Gate and records in his diary the conditions as they existed at San Francisco and in the gold diggings of California during the period of the gold discovery excitement.

A NEW COMPOSITE DESIGN

L. J. HAGEN of Oakland, California, ship carpenter and inventor, has patented a design for building composite ships which is claimed to be very suitable for medium sized freight and passenger vessels, towboats, yachts, and other types. It is not recommended for hulls of over 3500 tons deadweight capacity.

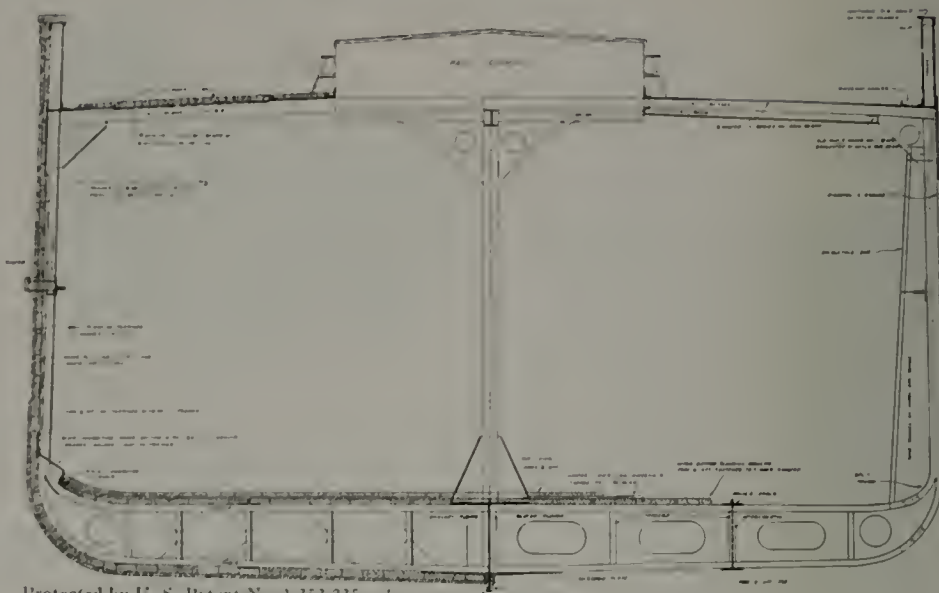
The principal characteristics of the design can be seen at a glance by the naval architect from the scale drawing of a midship section reproduced herewith. The inventor gives the following description of his method of construction.

The framing structure is erected in about the same manner as that of a vessel built entirely of steel and there will of course be nothing complicated or out of the ordinary in this respect. The planking is put on in strakes, fore and aft, in much the same manner as planking on an ordinary wood vessel, only more easily done, owing to the fact that heavy clamps ordinarily used in wood ship construction will not be needed.

The first layer of planking will be of a thickness suitable for the size of vessel to be built and fastened to frames with ordinary bolts and nuts and clinch bolts alternately. The seams are then caulked and made water tight in the usual manner. An outer planking, about half or less in thickness of the first planking, is then fastened directly on the first layer of planking, in strakes, fore and aft, fitted in close joints, each joint over-lapping the caulking of the first planking, not less than two inches, thereby insuring absolute water tightness, as the caulking cannot become loosened.

The surface may then be scraped and a continuous smooth surface obtained, with no projecting edges or rivet heads to rust and corrode with the continuous chipping and scraping.

This in itself will reduce maintenance cost to only a fraction of that required for steel vessels. On the inner side of the first layer of planking, which I will describe as the main planking, an inner planking, about the same thickness as outer planking, is then fitted vertically between frames from sheer plate down to fore and aft tie, and fastened directly on to main planking.



Protected by U. S. Patent No. 1,353,235

A midship section of cargo vessel on the L. J. Hagen composite system.

Tarred felt is placed between, to help further to obtain water-tightness and to prevent sweating in hold. The inner planking will be of advantage in several ways; will give local strength to main planking and also more strength to entire structure. Another advantage of the inner planking is this, that when fitted tightly between frames, it will relieve, almost entirely, the strain on the fastenings of main planking when vessel is working in heavy weather.

The inner bottom or tank top planking is laid in strakes fore and aft and fastened in the same manner as main planking, caulked and made water-tight in the usual manner.

The center layer is then laid diagonally across bottom with tarred felt between, top layer laid fore and aft and caulked if necessary. The deck is constructed in two layers, the first being laid in the ordinary way and fastened to beams, the second layer being fitted between the beams and fastened on underside of decking, tarred felt between. This will prevent leaks should caulking become loosened, give local strength to deck planking and also give strength to entire structure in the same manner as inner planking on sides without detracting from cargo space or adding any weight which will reduce the carrying capacity.

The Hicks Diesel Engine

(Continued from Page 327)

Oil under pressure is forced to every point requiring lubrication. A positive acting rotating plunger pump circulates cooling water through the jackets of the cylinders.

Every part of the Hicks engine is designed with extra large safety factor; the bearing surface unit pressure is very low; the horsepower rating is conservative. In fact, this new unit is just such an engine as would be expected from the Hicks organization, who have behind them a long experience in the design of internal combustion en-

gines and a great reputation as reliable engine builders.

The shop tests on this full diesel engine have shown most excellent fuel economy, close speed regulation over a wide range of speed, and ability to pull a good load at low speed. It is confidently expected that the first Hicks diesel marine installation will demonstrate to the fishermen of the Pacific Coast that the Hicks diesel possesses, in addition to full diesel fuel economy, the same characteristics which have so long been standard in the Hicks heavy duty marine gas engine.

THE FLETTNER RUDDER, III

By OLAV OVERGAARD

THE desirability of having as much as possible of the rudder area located in the propeller jet and of utilizing the increase in rudder pressure caused thereby has long been realized, but the practical solution offered some difficulty until Anton Flettner conceived the three-plane rudder operating upon the same principle as described in the foregoing. Multiple rudders have long been in use on warships and canal craft, but each plane has been mounted on an independent shaft and these in turn have been interconnected and operated by one common steering gear.

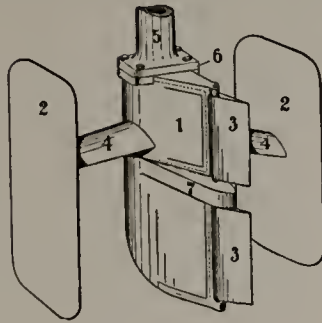


Fig. 17

Fig. 17 shows the arrangement of a Flettner three plane rudder. The two wing planes (2) are connected to the center plane (1) by means of flanged distance pieces (4) of pear shaped section. The rudder stem (5) is hollow and attached to the center plane by means of a coupling (6). When the coupling bolts are loosened, the entire rudder may be dismantled as the operating shaft concealed in the hollow rudder stem is disengaged simultaneously through a coupling. The operating shaft, it will be seen, is connected to the Flettner fin (3) by means of parallel rods protected by guard (7).

The first model experiments carried out with the Flettner three-plane rudder indicated that the efficiency was up to 100 per cent greater than that of an ordinary rudder of same area. Furthermore, that the rudder pressure when the three planes were properly proportioned and spaced was considerably greater

(Continued on page 78 adv. sec.)

— TYPICAL ARRANGEMENT OF FLETTNER THREE PLANE RUDDER — — FOR 3000 TON LAKE VESSEL —

THE ORDINARY RUDDER AS USED ON SISTER SHIPS IS SHOWN IN DOT & DASH LINE. THE STEERING ENGINE USED FOR OPERATING THIS, HAS A CAPACITY OF 15 TO 20 HP.

IT SHOULD BE NOTED THAT PLACE WAS MADE FOR THE FLETTNER RUDDER ARRANGEMENT WITHOUT IN ANY WAY ALTERING THE ORIGINAL DESIGN OF THE SHIP.

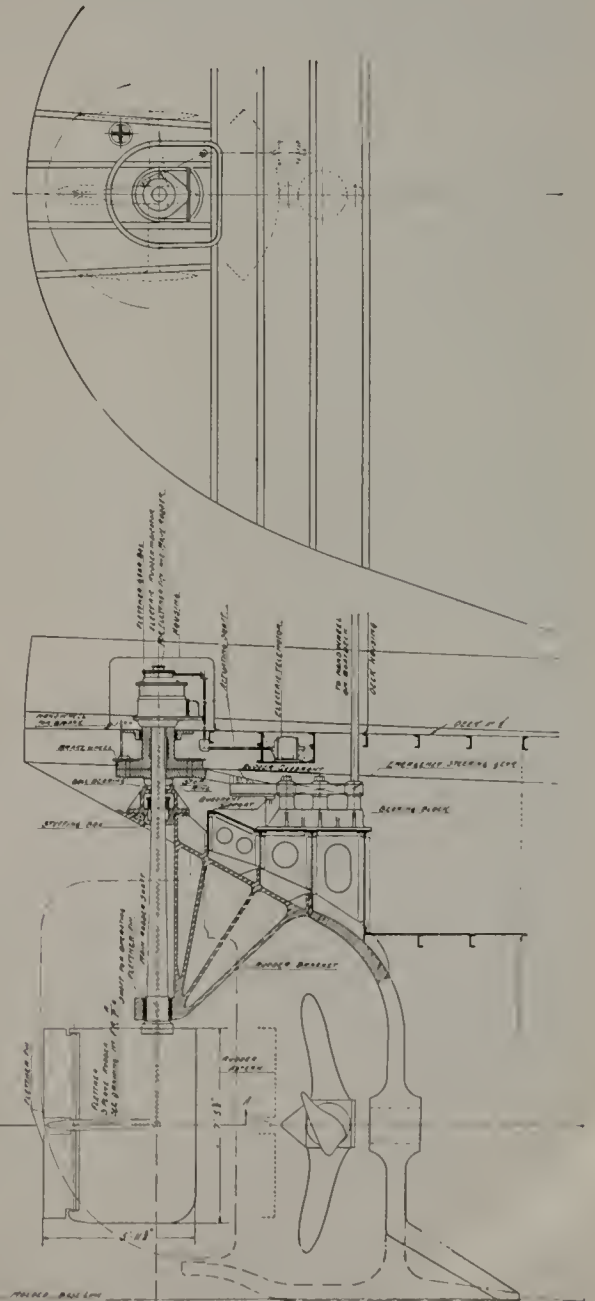
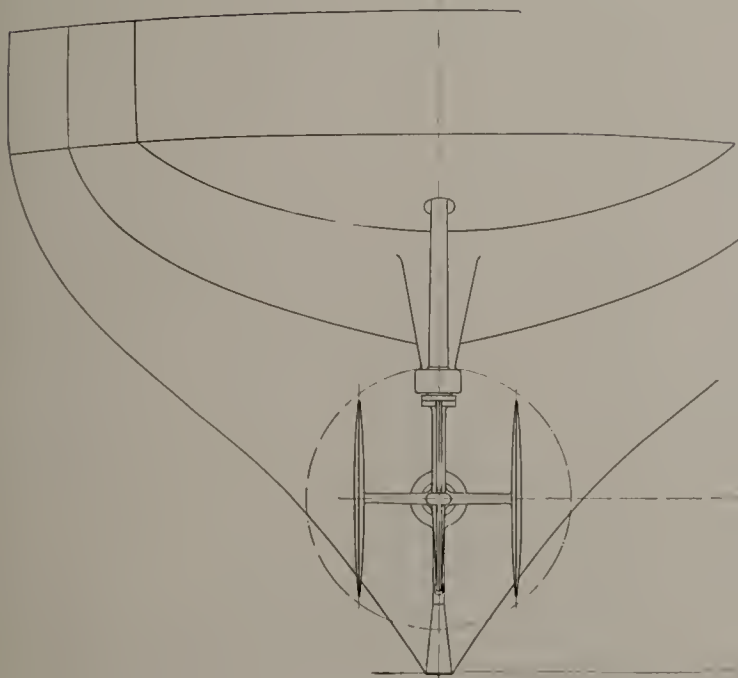
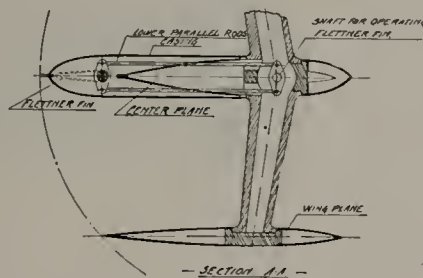


Fig. 18. A typical Flettner 3-plane rudder installation.

FOREIGN TRADE OUTLOOK

(Continued from page 303)

For that is what has made possible our wonderful trade with Cuba. It is estimated that more than a billion dollars have been invested in Cuba by Americans. Most of it has gone to help develop the production of sugar, tobacco, and the other natural products of Cuba. That increased production has led to the increased trade with us. It has given the people of Cuba correspondingly increased capacity to satisfy their needs and desires, and that very capacity to buy more has led them to want more.

In twenty years our trade with Cuba has grown about 700 per cent. There has been no 700 per cent increase of the population of Cuba. The actual increase has been less than 50 per cent. But with a 50 per cent increase in population and a 700 per cent increase in trade, it is made clear how the investment of American capital in foreign countries may develop American foreign trade to the benefit of all our people.

Exchange

Evidence of the increased purchasing ability of the countries which furnish markets for our products is also to be found in the rates of exchange now ruling as compared with those of a year ago. Sterling has advanced from about \$4.31 to par. Belgian francs are about 8 per cent higher than they were a year ago. Swiss francs 10 per cent higher, Dutch guilders $7\frac{1}{2}$ per cent higher. On the other hand, Italian lire have depreciated about $8\frac{1}{2}$ per cent and French francs about 4 per cent. Indian rupees are now 20 per cent higher than a year ago, Java florins nearly 12 per cent higher, Argentine paper pesos nearly 25 per cent higher, Uruguayan pesos 23 per cent higher, and Chilean paper pesos 6 per cent higher. These betterments in the rates of exchange all mean increased ability to purchase imports, whether from us or from other countries, which in turn are importers of our products.

Optimism Needed

I have been taking, of course, the long view of our foreign trade outlook. The elements which enter of necessity into consideration of the immediate future are too numerous to be discussed here. But when we hear, as we not infrequently do in these days, one or another of our friends or associates speaking of depression in foreign trade, it is well to consider whether he is voicing a personal or a common feeling, whether he is describing an individual of a general condition. It is well, also, to remember that there has been a considerable shifting in the manner of doing business which has affected profits, in some cases quite materially. Buying has been undergoing a marked change. Orders are more numerous, but for smaller quantities. The volume grows, but the cost of handling the business increases out of proportion to the increase in amount. Thus, while we may rejoice at the steadily growing volume of our foreign trade, it may be quite true that the profit resulting from it is not as satisfactory as that derived from a smaller volume. And with a narrow margin of profit, influences which at other times would hardly be noticed, may be felt keenly. In such a situation small matters may, through un-

timely discussion, produce unfortunate results. Constant prediction of misfortune not infrequently prepares the way for it.

In the long view, however, I think we have many reasons for confidence. Chief among them is the fact that the whole world is growing. Its production is increasing, and that means increased buying power. International trade grows as the world grows, and we may reasonably count upon getting our share. Such in brief is the situation facing our foreign trade; it is one of hopefulness and we should look forward to it as an increasing element in the prosperity of our country.



MAOI

THE Matson Navigation Company recently purchased at New York the steam ocean-going tug Moositauka. This vessel, 150 feet over-all, 27 feet 6 inches beam, and 15 feet draft, was equipped with two coal burning Scotch boilers, 11 feet 6 inches inside diameter and 12 feet long, with a heating surface 1550 square feet, each furnishing steam at 180 pounds pressure to a triple expansion reciprocating engine, 17 inches by 25 inches by 43 inches diameter and 30-inch stroke.

Under the supervision of Gibbs Brothers, Inc., naval architects of New York, she was reconditioned at the Tietjen & Lang Dry Dock Co., Hoboken, as an oil-burner and fitted to carry 200 tons of fuel.

After her reconditioning, on her own power she made the run from New York to San Francisco in 23 days, 5 of which brought her through one of the worst storms the Pacific has reported in many years. Notwithstanding these hard conditions, she arrived at San Francisco in perfect shape, ready immediately to proceed to Seattle, where she took a heavy tow for Hawaii.

The name of this tug was changed by the Matson Navigation Company to Maoi, and she will be used by them in inter-island towing work.

In the reconditioning, the Maoi was fitted with Todd type mechanical atomizing fuel oil burners and with Diamond soot blowers of the back connection type.

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

IN our Eastern marine insurance market, the most outstanding feature of the past month has been the rate war in tourist baggage coverage. At least four of the foremost companies writing this line have been at each other's throats with a vengeance, whittling down the rates and, at the same time, boosting the commissions, until most of the other tourist baggage writers dropped out of the race, preferring to let the business go rather than to accept it at figures that were a definite guarantee of a heavy loss. It takes a 2 per cent rate, on business hand-picked by discriminating agents, to give promise of anything like a profit; and here have been rates of approximately 1 per cent widely prevailing, on risks of almost any sort of character, with excess commissions the rule and the usual minimum premium of \$5 forced down to \$3. There is going to be a bitter harvest of losses on this spring's reaping.

The war started about mid-May. The country was circularized by a prominent company offering a 2 per cent rate and a 20 per cent flat commission, with no additional charge for foreign endorsements. Back came the boomerang, clipping off another fraction of the rate. It was promptly dispatched again, minus another fraction. This continued until the rate was about 1 per cent, the commissions sent up to 20 per cent from the regular inland marine scale of 15 per cent, with doubtless an additional overhead to favored agents. What the end will be is easily imagined; but, according to the judgment of the coolest heads in the business, it does not include a restoration of the old Conference. What was done to that body by an adroit use of the commission club was too severe to permit hope of its ever again being restored to life.

The former Tourist Baggage Conference collapsed about two years

MR. SHIPPING MAN

Do you know:

That there is an active war on for the insurance of tourist baggage;

That there were two important developments last month regarding York-Antwerp Rules;

That there is a decided difference of opinion in the United States Supreme Court on "Clean Bills of Lading";

That there are important changes in English Adjusters' Rules;

That there is a new London Bailee clause;

That every article written for us by Mr. Howell contains much concise information of great value to the ship operator?

SOME SHIP OPERATORS WHO READ THIS SECTION CAREFULLY EVERY MONTH HAVE MADE MUCH MONEY THEREBY.

ago, after surviving numerous internal dissensions for the matter of some eighteen months. In its prime it regulated commissions in all territory, with additional allowances in certain large brokerage cities, fixed rates, and otherwise attempted to keep this branch of underwriting on an even keel. It had a basic form of policy, with foreign endorsements and world-wide endorsements exclusive of Russia. There was a Conference "broad form", which covered all risks, including pilferage; and a restricted "limited" form. The rate for the "broad form" was 2½ per cent, with 50 per cent for foreign endorsements, and double the rate for "world-wide", Russia excluded. The "broad form" commission was 15 per cent, with a 25 per cent limit; and the commission on additional allowances in big brokerage cities was 10 per cent. In time the rate drop-

ped to 2 per cent, on account of excess commissions.

One of the singular features of tourist baggage underwriting is its extremely personal nature. People seem to find it touches their personal pockets more closely than any other form of insurance. When a man or woman loses a cloak or coat or some article of personal adornment he or she files a claim with dizzy promptness and if the loss is not made good at once they take it to heart and conceive so poor an opinion of the underwriting office that they cancel off the larger business of fire or casualty or marine insurance which they carried in it. The result is that the tourist baggage underwriter has to handle claims with great diplomacy, maintaining a broad attitude in such matters. As a rule the loss ratio is comparatively low, always excepting that on small policies. For this latter reason a minimum premium of \$5 has been regularly observed on ordinary forms with foreign endorsements, regardless of the amount of the sum insured.

York-Antwerp Developments

Since our last writing on this subject, which is just now so much to the fore among American shipping interests, there have been two important developments. The special committee, appointed March 16 last at the York-Antwerp Conference of the Chamber of Commerce of the United States, reported back its findings. It had held public hearings at New York in addition to private meetings, communicated with all American associations and individuals likely to be at all interested in the subject, received reports and suggestions, and otherwise exhausted the opinions of shipping interests along this line. After a careful analysis of this material it reported to the Washington Conference at considerable length; the upshot of which was that American judgment

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The Commonwealth Insurance Company, of New York**

PARROTT & CO., Pacific Coast Marine Agents

320 California Street

E. L. BARRY, Manager

SAN FRANCISCO

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Insures Hulls, Cargoes,

HEAD OFFICE: CALIFORNIA AND SANSOME

JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON

E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

does not support the revised rules produced at Stockholm last year, and urges that the American branch of the International Law Association call upon the general body for another conference at which the American viewpoint may be presented. Furthermore, it requested the Chamber of Commerce of the United States to instruct its delegates to the Brussels conference in June to oppose any endorsement of the Stockholm revision by the International Chamber of Commerce.

The result has been that at the annual meeting of the Chamber of Commerce of the United States, held during the closing days of May, the Insurance Session adopted the following resolution:

"Resolved, That the Chamber of Commerce of the United States approves in principle the work of the International Law Association as embodied in the York-Antwerp Rules, 1924, as a great step forward in providing international uniformity in the definition and adjustment of General Average losses. Although it recognizes that the said rules are an improvement over the York-Antwerp Rules, 1890, this Chamber is unable to recommend the adoption of the York-Antwerp Rules, 1924, without modifications.

"Further resolved, That a copy of these resolutions be delivered to the American Branch of the International Chamber of Commerce and the American Branch of the International Law Association, requesting that they take steps to arrange for an international conference to revise the York-Antwerp Rules, 1924, so that they may receive universal approval and adoption."

So far as marine underwriters are concerned, the revised rules have been accepted. They are not all our underwriters could desire, but it was thought best, in the interest of cooperation, to endorse them and try to find opportunities to bring them

more into line with American desires through subsequent amendments.

Clean Bills of Lading

It is the opinion of the more thoughtful among marine underwriters that a serious opening is left in shipping arrangements in which bills of lading fail to recite the condition of merchandise. This point was emphasized in a recent decision by the United States Supreme Court in the case of the *Isla de Panay*, where certain shipments of olives arrived from Spain seriously damaged and suits were lodged against the carriers. The defense of the latter was that the bill of lading expressly exempted the vessel from responsibility for damage resulting from breakage of the articles and fragile containers. The shippers had given a guarantee releasing the carriers from responsibility, in return for a clean bill of lading; but the latter contained no statement regarding the order or condition of the merchandise. The District Court sustained the carriers, and the Circuit Court of Appeals affirmed this decision, as did the Supreme Court.

To this latter decision Chief Justice Taft, Justice Sutherland, and Justice Devanter dissented, stating:

"Under these circumstances the omission of the notation in respect of the condition of the goods was nothing short of a suppression of the truth in order to further the fraudulent designs of the shippers. Upon every principle of fair dealing it should be regarded as the equivalent of a false notation of good condition which the ship is estopped to deny as against the claims of the consignees who relied upon it. To hold otherwise is to permit the wrongdoer to take advantage of his own misconduct, which a court of admiralty cannot allow with due regard for those equitable principles by which it is governed."

A prominent New York marine underwriter has expressed himself on the issues involved, as follows:

"The fact is the law is established and, since bills of lading similar to the one used in this case are now being frequently issued, it will be seen that underwriters cannot place reliance on what otherwise appears to be a clean bill of lading, unless the bill of lading recites that the goods were received in apparent good order and condition. Under a bill of lading containing the latter provision, carriers are estopped from setting up any defense of bad order at the time of shipment, if such bad order was known to them, but they nevertheless gave a clean bill of lading. Under the form used in the *Isla de Panay* case, carriers are not thus limited and the danger is that underwriters may pay a claim only to later find out that they have no recourse against the carriers."

New English Adjusters Rules

At the recent annual meeting of the English Association of Average Adjusters, held in London, considerable discussion was had on the subject of uniformity of practice among average adjusters, and particularly with respect to the report of the special committee of underwriters, adjusters and claim settlers formed a year ago to look into this matter. Of equal importance was the adoption of two new rules submitted by the Rules of Practice Committee, which were an outgrowth of the divergence in practice referred to above. The first rule has to do with wages and provisions during detention at a vessel's first port of loading before any cargo has been loaded. These charges are to be allowed in general average under Rule XI of the York-Antwerp Rules, 1890 and 1924. By the second rule, interest on amounts made good in general average are to be apportioned ratably between the assured and the underwriters after taking into ac-

INSURANCE COMPANY

Freights and Disbursements

STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Manager, Southern California Marine Branch
740 SOUTH BROADWAY
LOS ANGELES

309 COLMAN BUILDING, SEATTLE, WASHINGTON

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

count the sums paid by underwriters and the dates of such payments.

Automobile Congestion

Marine insurers have been considerably anxious over the unprecedented congestion of automobiles at British ports, where enormous numbers of cars are being hurried into that country in order to escape the reimposition of the 33 per cent tax provided for in the McKenna duties for foreign cars and parts. At Southampton, Liverpool, and Plymouth, American-made automobiles are glutting all possible parking places. American and French makers have responded to the pleas of British importers to get as many cars into England as possible before the new tariff becomes effective, with the result that cars are being stored in all available sheds, with acres of them spread over suburban fields awaiting storage.

Such congestion intimately concerns the underwriters, in view of the fact that automobiles are written "all risks" and under the warehouse to warehouse clause, and including "parts clause" which covers parts enclosed in the original shipment. There is special danger from theft and pilferage under such conditions, particularly as shippers have been using poor casings, so that shipments are the more likely to be broken into or damaged in handling. The average rate is about nine cents, which leaves next to no margin for the numerous small losses that accumulate when pilferage is made easy.

Writing River Risks

Hazards attendant upon the insurance of river craft were brought forcibly to the attention of underwriters by the recent deplorable foundering of the M. E. Norman in the Mississippi River off Memphis. Thirty-two lives were lost in that disaster. It is said that this steamer was an old excursion boat, and, like

so many in that class, a pretty poor risk. She turned turtle; and the cause is believed to have been the effect of cross currents upon the action of double-bottom oil fuel tanks. The insurance was written in the Middle West. According to a well-established doctrine of hull insurance, there is no liability for loss of life, even though the owner exercised due diligence in the matter of seaworthiness. Federal statutes restrict liability to the value of the vessel and the pending freight.

New London Bailee Clause

Claims have frequently been paid by underwriters which should have been made upon the carriers in the first place, and which ought to have been settled by the latter under their legal liability in law. The marine insurance policy was never intended to cover shipowners' liability. There should rest upon the assured the onus of claiming from the carrier for loss or damage for which the latter is responsible, the liability of the underwriter being properly called into question only after such a claim has been made and proved to be untenable.

With the attention of setting this matter right, a new clause has been issued by the Institute of London Underwriters and is known as the "Institute Bailee Clause." Apparently it is a development of the recently enacted British Carriage of Goods by Sea Act, and it has the distinction of being the first clause to be drafted by the recently created Technical and Clauses Committee of the Institute. It is for use in connection with cargo insurance in the United States and Canadian trade, and as yet is not included in the Institute cargo clauses, having been issued with a recommendation that it be employed by underwriters. It reads as follows:

"Warranted free from liability for loss of, or damage to merchandise

whilst in the custody or care of any carrier or other bailee who may be liable for such loss or damage thereto, but only to the extent of such bailee's liability.

"Warranted free from any claim in respect of merchandise shipped under a bill of lading or contract of carriage stipulating that the carriage or other bailee shall have the benefit of any insurance on such merchandise, but this warranty shall apply only to claims for which the carrier or other bailee is liable under the bill of lading contract or carriage."

News in Eastern Offices

An important office merger was effected at New York during the close of May, when a corporation was formed by W. J. Roberts and C. Russell Ebert by which they became New York marine underwriters for the Automobile Insurance Company, of which Mr. Ebert has been marine secretary since 1920, and the Standard Marine of Liverpool and the Union of Canton, of which Mr. Roberts has been United States marine manager. The underwriting policy of these companies will continue as heretofore. This change does not affect the inland marine business of the Automobile, which will be handled as in the past at 100 William street. Ocean marine only is involved. Roberts & Ebert, Inc., have taken offices in the Cotton Exchange Building, at William and Beaver streets.

Appleton & Cox, Inc., have concluded their new Pacific Coast plans by the organization of the Pacific Marine Insurance Agency, Inc., at San Francisco. It has been formed to represent this corporation's marine companies, until recently with Edward Brown & Sons' general agency, as soon as the contracts expire. J. R. F. Servaes, formerly manager of the marine department of Edward Brown & Sons, becomes the president of the new company.

United States Merchants & Shippers
Insurance Company

United States Fire Insurance Co.
Marine Department

Milwaukee Mechanics' Insurance Co.
Marine Department

Royal Exchange Assurance
Marine Department

Agricultural Insurance Company
Marine Department

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with F. Eldred Boland vice-president, and H. W. Hauser secretary-treasurer. Permanent headquarters have been opened at San Francisco.

The New York Insurance Department's report of its examination of the American Merchant Marine Insurance Company shows that on March 31 last the company's total admitted assets aggregated \$789,492, with liabilities totaling \$312,349.

This indicates an impairment of \$122,857 in the \$600,000 capital.

D. C. Anderson, manager of the loss department of the Syndicates, is to take over some of the underwriting duties formerly discharged by W. B. Harwood, resigned.

T. J. Anderson, for thirty years surveyor at Galveston for the Board of Underwriters of New York, and its predecessors, retired May 21.

Freights and Charters

June 18, 1925.

SINCE our last report dated May 25, the following steamers have been reported fixed with grain to the United Kingdom and Continent: British stmr. Farnworth, wheat, 33/9, Sept. loading, by Suzuki & Co.; British stmr. Wearpool (or substitute), grain, 34/-, Sept.-Oct. loading, Balfour, Guthrie & Co.; British stmr. Clearton, North Pacific to United Kingdom, Bordeaux-Hamburg, 35/-, Mediterranean 2/6 extra, Sept., Balfour, Guthrie & Co.; British stmr. Framlington Court, grain, 32/6, June, charterers not mentioned; British stmr. Jerseymoor, grain, 32/6, July, charterers not mentioned; British stmr. Rassay, grain, terms private, Aug., Kerr Gifford & Co.; British stmr. Benledi, grain, 32/6, July, charterers not mentioned.

The following steamers are reported fixed with lumber to Australia by J. J. Moore & Co.: Two Japanese stmr., \$14.50, Oct.-Nov.; Japanese stmr., \$14, Nov.-Dec.; Japanese stmr., \$14.50, Nov.-Dec.; British stmr. York City, \$14, July; Norwegian stmr. Kalfarli, \$14.50, Aug.

The following steamers are reported fixed with lumber to the Atlantic Seaboard: American stmr. Orient, \$14, June loading; American stmr. West Katan, rate not mentioned, Aug. loading, A. C. Dutton Lumber Co.; British stmr. Avonmede, \$14.50, June loading, charterers not mentioned.

The following time chartered steamers are reported: Norwegian stmr. Hanna Nielsen, delivery Hampton Roads, 9 to 12 months, 90 cents, June loading, Southern Alberta Lumber & Supply Co.; Norwegian stmr. Alaska, delivery Hampton Roads, 6 to 9 months, 85 cents, June, same charterers; Norwegian stmr. Golden Gate, 18 months, same charterers; British stmr. Strathfillan, Pacific

trade, 4/-, H. R. MacMillan Export Lumber Co.

The following sales are reported: American bktn. Fullerton, Associated Oil Co. to Capt. H. C. Monstad, Los Angeles; American stmr. Hawaiian, American Hawaiian S. S. Co. to Lloyd Braziero, Rio de Janeiro; American stmr. Gedney, E. A. Sims to California Alaska Corp., Los Angeles; American stmr. Patterson, \$10,000, U. S. Marshal to Todd Dry Docks, Inc., Seattle; American m. s. Donna Lane, \$39,000, Scandinavian Bank, Seattle, to Utopian Fisheries; American tanker Atlas (flag changed to Italian), Standard Oil Co. to Societa Armatrico Italiana, Genoa; American bktn. Puako, \$2275, Hecate Straits Towing Co., Victoria, at auction; American stmr. Susquehanna, \$85,000, U. S. Shipping Board to Fincke, Van Dort & Co.; American stmr. Santa Clara, Santa Malta, Santa Olivia, Santa Barbara, Santa Paula, and Santa Rosa, Atlantic & Pacific S. S. Co. to American Hawaiian S. S. Co., terms private; Mexican stmr. Anahuac, \$20,000, Mexican government to A. W. Lawson.

The following tanker fixtures are reported: American tanker Baldbutte, California to North of Hatteras, 67½ cents, crude, June; American tanker Derbyline, same, 61 cts., tops, June; American tanker Tuxpanoil, San Pedro to Boston, 67 cts., crude, June; American tanker Roanoke, California to North of Hatteras, 79 cts., July; American tanker Harvester, California to Boston, 80 cts.; Providence 79 cts. or New York 78 cts., June; American tanker Sheandoah, same, 82 cts., or New York 80 cts., July; American tanker Geo. W. Barnes, California to North of Hatteras, not east of New York, 80 cts., July.

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AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

Steamer Malolo

Work is progressing rapidly on the steamer Malolo, building by Wm. Cramp & Sons Ship & Engine Building Company under the supervision of Gibbs Bros. of New York for the Matson Navigation Company. A number of contracts have been placed for materials and equipment for the vessel. Some of them are as follows:

Babcock & Wilcox Company, New York, will supply the twelve boilers and their oil-burning equipment. The boilers will have a total evaporating surface of 55,764 square feet and a superheating surface of 11,160 square feet. Working pressure will be 280 pounds at 100 degrees Fahrenheit. The oil burners



Above are two pictures taken on May 25, showing progress made in the construction of the steamer Malolo since keel laying May 4. Upper right shows the floors looking forward; lower left shows margin plates, floors and tank tops.

(forced draft) will be arranged six burners for each boiler. Furnace bottoms will be sheet steel protected by asbestos millboard and Sil-O-Cel and split fire brick.

Bethlehem Steel Company will supply the shaft and turbine forgings, also 680 feet of Class A steel bar for bolts and studs for the engines.

Federal Steel Foundry, Chester, Pa., will supply the gigantic stern post. It is a single casting and weighs over 39,000 pounds.

Detroit Copper & Brass Rolling Mills, Detroit, Mich., has order for the rolled brass tube sheets for the main condenser.

Whitehead Metal Products Company, Philadelphia, has order for 1188 feet of monel metal strip for nozzle blades.

Milton Manufacturing Co., Milton, Pa., has order for the turbine joint bolt nuts.

Carnegie Steel Company has an order for steel angle bar and steel tie bars.

Lukens Steel Company has an order for flange steel for shell top plates for the main condensers.

American Brass Company, Waterbury, Conn., has order for the blade material for the steam turbines.

Specifications have been issued and bids requested on galley equipment, including pantry service; tex-

tile equipment, including dining linen, bed coverings and linen, towels, and miscellaneous textile articles; watertight doors for bulkheads; steam steering gear, including Sperry Gyro-pilot and telemotor control.

No Docking Troubles on the Pacific

While we sympathize with the officials of the Panama-Pacific Line in that their intercoastal liner Mongolia was thrown off her schedule in New York recently due to her temporary inability to dry-dock, we are again prone to ask, "Why not use the Pacific Coast facilities?" San Francisco, the principal port of call on the Pacific Coast for the Panama-Pacific line, has dry-docking facilities second to none in the world. While on this coast the Mongolia might have taken immediate advantage of any one of three docks on San Francisco Bay which are ample in size to accommodate her. Of course we understand that it is more politic for a vessel to be docked at her home port, but it seems to us that it would often mean money in the pockets of the stockholders of a number of intercoastal lines if they performed more of their overhaul work on this coast, where equipment, climate, and engineering ability cooperate in quick dispatch, especially in the winter.

Here is the principal dry-docking equipment on San Francisco Bay:

	Extreme Length	Length at bottom	Breadth
Hunter's Point Dry Dock (graving dock)	1020 ft.	1100 ft.	150 ft.
Hunter's Point Dry Dock (graving dock)	750 ft.	714 ft.	103 ft.
Two floating dry docks, Oakland	459 ft.		105 ft.
These two connected gave a total lifting power of 21,440 tons	459 ft.		105 ft.
Floating dry dock, Alameda	450 ft.	400 ft.	80 ft.
Floating dry dock, Alameda	301 ft.	260 ft.	68 ft.
Floating dry dock, Alameda	270 ft.	230 ft.	66 ft.

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Current Shipbuilding

On June 1, 1925, American shipyards were building or under contract to build for private shipowners 139 steel vessels of 167,059 gross tons compared with 140 steel vessels of 226,926 gross tons on May 1, 1925, according to the Bureau of Navigation, Department of Commerce.

There were 26 wood vessels of 9840 gross tons building or under contract to build for private shipowners during the same period compared with 27 wood vessels of 10,890 gross tons on May 1, 1925.

While at the present time there is a dearth on the Pacific Coast of

IN PACIFIC COAST SHIPYARDS

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construction of vessels of large size or ocean-going type, there is great activity in small boat construction, and this is particularly evident on Puget Sound. The rapid growth of the American and Canadian cities bordering on Puget Sound and the increased intercourse between them is bringing a veritable boom in freight boat, ferryboat, barge, and tug building. Practically all the new craft are being equipped with internal combustion engines of the diesel type.

Work in Prospect

Ferd Hons, vice-president, the Inter-Island Steam Navigation Company, Honolulu, recently reported that his company had retained Gibbs Bros., naval architect of New York, to draw up plans for a new vessel for the Hawaiian Island service. The vessel will be 285 feet long with 46 foot beam and will have accommodations for 200. The estimated cost is \$800,000. The vessel will be especially designed for tourist travel between Honolulu and Ahukini, Kauai, and it would be ready for service in the fall of 1926.

The Golden Gate Ferry Company, operating automobile and passenger ferries between San Francisco and Sausalito, on June 23 made a proposal to the Berkeley City Council to operate automobile and passenger ferries between San Francisco and that city. Under the terms of the proposal the ferry company would build a three-mile pier into the bay from the present terminus of University Avenue, Berkeley. The project would involve an expenditure of about two million dollars. A. O. Stewart is president of the Golden Gate Ferry Company.

It is reported from New York that the Clyde Line has under consideration the construction of two new 20-

knot passenger vessels for their New York-Miami run.

General Petroleum Company, San Francisco, after calling for bids the first of June for two self-propelled barges, has held up award of contract pending possible changes in specifications. One large barge may be built instead of two small ones.

The steamer Comfort, purchased the latter part of May by the General Metal & Supply Company, San Francisco, may be fitted up for the coastwise passenger and freight service. The overhaul and renovation of this vessel will involve considerable work. It is rumored that the vessel was purchased for the Pacific Steamship Company. Captain R. C. Brennan, operating manager, Edward Hall, comptroller, and E. Grant McMicken, general passenger agent of the Pacific Steamship Company, recently visited San Francisco, it is believed for the purpose of arranging overhaul plans.

If any of our friends around San Francisco Bay have a shipyard for sale, here is their opportunity. Following is a copy of a letter recently received by the Oakland Chamber of Commerce from E. M. Howard, P. O. Box 396, Visalia, Calif.

"Will you please send me pamphlets descriptive of the business opportunities and resources of Oakland? I am particularly interested in finding a small motorboat and yacht building plant which could be bought or in which an interest could be had."

Edward L. Doheny of Los Angeles recently organized the Pan-American Western Petroleum Company, which will be a super-corporation controlling all the Doheny oil interest. He reports that as soon as the new company is organized he will either build or buy a fleet of

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IN ATLANTIC COAST SHIPYARDS

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tankers to transport oil and products of oil.

The Southern Pacific Steamship Lines still have under consideration plans for the construction of a passenger and freight vessel to replace the steamer Bienville, which is being converted to a cargo carrier following the recent burning of her superstructure. A. S. Hebble, superintending engineer of the company, designed and supervised the construction of the Bienville.

New York City is planning the construction of a 90-foot dredge hull and two diesel tug boats.

Recent Contracts

Federal Shipbuilding & Dry Dock Company has an order for two motorships from the United States Steel Products Corp., 250 feet long, 43 feet beam, and 20 feet draft. One will have diesel-electric drive and the other a double-acting direct diesel drive.

Erickson Bros., Ltd., North Vancouver, B. C., have an order for a powerful combination tug and cruiser for the British Columbia service of the Canadian Fishing Company, Ltd. The tug will be equipped with diesel engines and make a speed of 10 knots.

American Bridge Company, Pittsburgh, Pa., has an order for three barges, 160 by 34 by 7 feet, for PattonTully; two barges, 275 by 52 by 9 feet, for the Standard Oil Co. (La.); and thirty barges, 175 by 26 by 11 feet for the Ohio River Co.

Bethlehem Shipbuilding Corporation, Harlan Plant, Wilmington, Del., has an order for a twin screw, diesel-electric fireboat for the city of Houston, Texas. The boat will be 117 feet 6 inches L.B.P., 27 feet beam, 8 feet 6 inches draft, and will be equipped with two 500 horsepower Winton 4-cycle diesel engines, each driving at 420 r.p.m. the 350 kilowatt, 500 volt Westinghouse generator and 25 kilowatt, 125 volt exciters, with Ward-Leonard system of pilot house control. The contract was awarded on a bid of \$272,200.

DeFoe Boat & Motor Works, Bay City, Mich., has an order for three steel patrol boats for the U. S. Coast Guard, 98 L.B.P., 23 beam, 7 loaded

draft, to be equipped with 300 horsepower diesel engines generating a speed of 12 miles, to cost \$45,800 each.

Sun Shipbuilding Company, Chester, Pa., has an order for eight carfloats for the Pennsylvania Railroad.

Keel-layings

Two barges for stock for J. C. Johnson's Shipyard, Port Blakely, Wash., May 25 and June 8.

Seafarer, schooner yacht, by Bath Iron Works, for Parker Corning, April 21; Charmian, schooner yacht for Newcomb Carlton, April 23; Shearwater, schooner yacht for F. L. Crocker, April 27; schooner yacht for Julius Fleishman, May 1; Yo-Ho, express cruiser for Clifford Brokaw, May 5.

Carfloat by the Bethlehem Shipbuilding Corp., Harlan Plant, for D. L. & W. R. R., May 18.

U. S. Coast Guard cruisers, by De Foe Boat & Motor Works, April 10; April 18; May 5.

Steel hull ferry by Spedden Shipbuilding Co., Baltimore, for Gloucester & Yorktown Ferry Co., May 22.

Derrick barge for Andian National Corp. by Sun Shipbuilding Corp., May 1.

Launchings

Wm. G. Mather, freighter, Cleveland S. S. Co., by Great Lakes Engineering Works, May 23.

Hampton Roads, automobile and passenger ferry, for Norfolk Ferry Co., by Pusey & Jones Co., May 28.

Deliveries

John H. and Selma S., cannery tenders, for Libby, McNeill & Libby, by J. C. Johnson's Shipyard, Port Blakely, Wn., April 22; Dodeca, tugboat for Cary Davis Tug Co., Seattle, June 1.

Fei-Seen, schooner yacht, for Irving Cox by Bath Iron Works, May 19; Saghaya, schooner yacht, for Howard C. Smith, May 23; Flying Fish, schooner yacht, for W. F. Carey, May 23; Margaret Mary, schooner yacht, for John Bossert, June 2.

Robt. J. Buck, bulk freighter, for Geo. Hall Coal & Shipping Corp., Montreal, by Collingwood Shipbuilding Co., Collingwood, Ont., May 20.

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Pacific Coast Shipyards

Repair Awards

Hanlon Dry Dock Company, Oakland, Calif., was awarded contract for repairing the Army transport *Cambrai*. Bids submitted by various yards were Hanlon Dry Dock Co., \$84,255; Moore Dry Dock Co., \$92,382 for reconditioning and \$5290 for drydocking; General Engineering & Dry Dock Co., \$93,323; A. W. de Young Boat & Shipbuilding Co., \$110,788.88; Bethlehem Shipbuilding Corporation, \$116,167.50, with drydock \$5380 additional.

* * *

Todd Dry Docks, Inc., was recently awarded repair job on the steam schooner *H. W. Baxter*, on a bid of \$21,500 and 17 days. The vessel was damaged when she went aground near Everett, Wash., the first of June. Other bidders for this job were the Heffernan Drydock Co. and the Winslow Marine Railway of Seattle.

Shipyard Notes

A bay and river motor tanker for the Union Oil Company of California was recently launched by the Moore Dry Dock Company, Oakland, California. The vessel is named the *Red Line* and held her trials on June 17. She is 175 feet long, 36 feet beam, 5 feet 6 inches loaded draft. The propelling power is furnished by two 165 horsepower, 4-cycle, Western-Enterprise full diesel engines. A 4-cylinder 110 horsepower diesel engine drives the Northern rotary pumps, which have a capacity of 225 gallons per minute. Her capacity is 150,000 gallons of oil.

Another barge, the *Coronado*, of about one-third the length, is building at the Los Angeles Shipbuilding & Drydock Corp. for San Diego Bay service of this company.

* * *

The Lake Washington Shipyards, of Houghton, Washington, recently launched the automobile and passenger ferryboat *Kitsap* for the Kitsap County Transportation Company. The vessel is 168 feet long, 49 feet beam, capacity 90 to 100 automobiles, and is propelled by 800 horsepower Washington-Estep diesel engine supplied by the Washington Iron Works, Seattle.

Orders for electrical marine equipment, including generators, motors



Above is a picture of the stern post for the steamer *Malolo*. It is a single casting weighing over 39,000 pounds; it is 12 feet high, 12½ feet long, and 9 feet wide in cross-section. The casting was poured by the Federal Steel Foundry, Chester, Pennsylvania.

and deck auxiliaries for the West Indian and Gulf of Venezuela now being reconditioned and converted to motorships by the Sun Shipbuilding Company, Chester, Pa., were awarded to the Westinghouse Electric & Mfg. Co. The West Indian was recently purchased by Henry Ford from the Shipping Board. Sun-Doxford engines of 5400 indicated horsepower will be installed.

* * *

Learner & Rosenthal, Oakland, California, junk dealers, have purchased the United States Navy vessel *Pensacola*.

* * *

Another ferryboat was launched at Seattle during June. That was the *Crosline*, built for the Crosby Direct Line Ferries by the Marine Construction Company of Seattle. The ferryboat is 150 feet long, 48 feet beam, 13.9 feet depth, equipped with a 750 horsepower Sumner type heavy oil engine. The vessel has a capacity of 65 automobiles and was designed by L. H. Coolidge of Seattle.

* * *

L. E. Caverly was elected vice-president and general manager of the Los Angeles Shipbuilding & Drydock Corporation recently. Mr. Caverly is well known along the Pacific and Atlantic Coasts as a marine engineer of considerable ability and has been superintending engineer and assistant to the president of this company. The former manager, L. R. McFie, resigned his position to become vice-president and treasurer of the Marine Corporation and the Sierra Refining Company of Los Angeles.

* * *

Four large steel tow barges for in-

ter-island pineapple hauling in Hawaii were recently built on the Honolulu waterfront by the United States Steel Products Company under the supervision of Edward C. Gobdel. Two are for Libby, McNeill & Libby and two for the Inter-Island Steam Navigation Company. The barges are all steel construction, 130 feet long, 40 feet wide, and 9 feet depth with capacity of 600 tons, cargoes to be transported on deck beneath canvas.

* * *

The Sound Boat & Engineering Company, Lake Washington, Seattle, on June 9 launched a passenger and freight motorship, the *Silver Wave*, which they have built for the Enterprize Steamship Company controlled by Lomen Brothers of Nome, Alaska, for Alaskan service. The craft is 65 feet long, 18 feet beam, and 7 feet draft. She will have accommodations for 22 passengers and will carry 80 tons of freight. She is equipped with a 75-horsepower Fairbanks-Morse engine.

* * *

There seems almost no end to the amount of work the Puget Sound yards have been doing lately. We have to report the conversion of the ferryboat *Puget* of the Puget Sound Navigation Company by the King & Winge Shipbuilding Company, Seattle, under plans by Lee & Brinton, Seattle naval architects. The ferryboat now has a 320 horsepower, direct reversible, 4-cylinder Bolinder oil engine.

* * *

This summer will see the completion at British Columbia of two large drydocks. One is a graving dock 1150 feet long and is located at Esquimalt. The other is a floating dock 550 feet long at North Vancouver. The graving dock is building the Canadian government at an expense of about six million dollars. The floating dock is being built by the Burrard Dry Dock & Shipbuilding Company with the assistance of the Dominion government.

* * *

The Webster Dry Dock Company, Seattle, is building a machine shop to cost \$1800.

* * *

The Prince Rupert Dry Dock & Shipyard, Prince Rupert, British Columbia, recently completed a 60 foot wooden cruiser, the *Lillian* for the Forest Branch, Lands Department of the Provincial government. This boat has a breadth of 12 feet 4 inches and a depth of 8 feet, and is equipped with a 60 horsepower Vickers-Petter semi-diesel engine.



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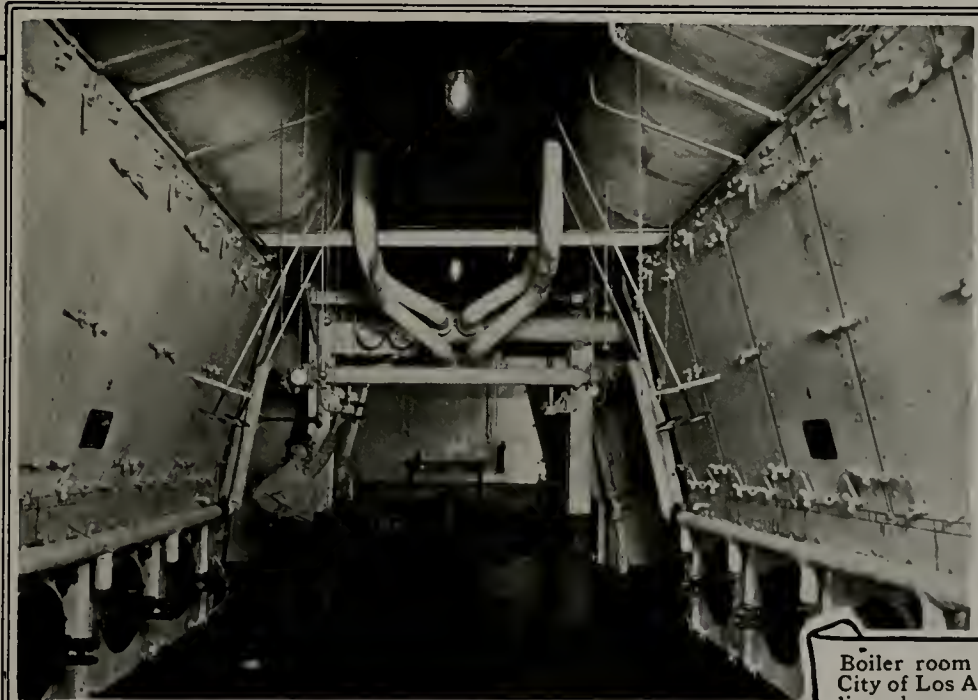
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During the trials a speed of 9.7 knots was obtained. She was designed by Thomas Halliday.

J. C. Johnson, shipbuilder of Port Blakely, Washington, recently delivered to Cary-Davis Tug & Barge Company of Seattle a diesel-powered tug, the Dodeca. This tug cost more than \$30,000. She is equipped with twin screws and twin rudders and is especially built for shallow bar and shallow river water. Her dimensions are 65 feet long and 18 feet beam and she is equipped with two 80-horsepower Enterprise Diesel engine.

The first fishing vessel to be built by Japanese at Los Angeles harbor was launched on June 18. The boat, named Patricia II, is 110 feet long and has refrigeration capacity for 150 tons of frozen fish and sufficient cruising radius to enable the craft to fish in Mexican waters and return. The launching was performed in true Oriental and spectacular fashion.

The St. Helens Shipbuilding Company, St. Helens, Oregon, is doing considerable repair work both at their St. Helens and their Portland yards. They are also building barges on quite an extensive scale and mast spuds and cargo booms for the fish-

ing fleets of the Columbia River and Alaska.

A marine ways for the accommodation of small craft, such as fishing vessels and yachts, has just been completed at the plant of the Los Angeles Shipbuilding Corporation, San Pedro, California. The ways are of steel and have a number of side tracks permitting them to handle anything up to 60 gross tons.

The Federal government has won a judgment of \$11,571,858.05 against the Virginia Shipbuilding Corporation in their four-year-old legal battle involving claims and counter-claims growing out of the corporation's war-time shipbuilding contract with the Shipping Board.

Reversing a previous finding in chancery by the late Judge Charles E. Nicols awarding \$2,500,000 to the corporation, the decision in favor of the government was handed down March 5 by Federal Judge Waddell, sitting at Alexandria, Virginia. The judgment is in part satisfaction of a counter-claim for \$24,000,000 brought by the government against the Virginia Shipbuilding Corporation after the latter had sued the government for \$6,000,000 on account of seizure by the Shipping Board of nine ships built by the corporation.

Progress of Construction

Pacific Coast

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

John II, cannery tender, Libby, McNeill & Libby, 65x17x7; keel Feb15/25; launch Apr18/25; est. delivered Apr22 25.

Selma S, cannery tender, sister to above; launch Apr18 25; delivered Apr22 25.

Dodeca, twin screw tugboat, Cary Davis Tug & Barge Co., Seattle; 65x18x5 ft; 85 HP Enterprise diesel eng; keel Mar16 25; delivered June 25.

Beryl F, cannery tender, Sunny Point Packing Co., Seattle; 86 length by 19 beam; 165 HP Atlas Imperial diesel eng; keel Apr2/25; launched Mar25 25; delivered June10 25, est.

Barge, 100x36 feet, for stock, keel May25/25.

Barge, same as above, for stock, keel June 8 25.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION San Pedro, Calif.

No name, hull 47, straight stem and elliptical keel, one deck, fireboat, for Los Angeles Fire Department, 93 ft 4 in LBP, 19 ft beam; 6 ft 6 in loaded draft; 17 mi speed; 900 SHP Winton gas eng; keel May15 25, est. delivered Oct 1, est.

No name, hull 48, barge, Union Oil Co. of Calif., 50 ft LBP, 20 ft beam; 4 ft 6 in loaded draft; 13 DWT, keel May16 25.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460 LBP, 61 beam; about 20 loaded draft; 16 K loaded steel, turbine eng, 7000 SHP; two WT express type boilers; 10,000 tons disp; keel April 21, launch July 2, est. delivered Jan/25, est.

ROBERTSON'S SHIPYARD Alameda, Calif.

No name towboat, San Francisco Bridge Co.; 6 LBP, 1 beam; draft, 100 HP Union diesel eng; keel May4 25; delivered June1 25, est.

Barge, 60x36 ft, keel Apr27 25.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
One towboat, Carnegie Steel Co.; 170x39x6 ft; delivered July/25, est.

Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.

Four barges, U. S. Engineers; 80x26x5.

Three barges, for Patton Tully; 160x34x7 ft; delivered Nov 25, est.

Two barges for the Standard Oil Co. (La.); 275x52x9; delivered Sept 25, est.

Thirty barges for the Ohio River Co.; 175x26x11; delivered Nov 25, est.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.

No name, hull 790, self-unloading stone carrier-Bradley Transportation Co.; 566 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Burke.
Iris Seen, hull 99, schooner yacht, Irving Cox; 58 L.O.A.; 12 beam; 7 ft 6 in draft; Kermath engs; keel Jan20 25; launched May16 25; delivered May19 25.

Sachaya, hull 100, schooner yacht, same as above, for Howard C. Smith; keel Jan20 25; launched May22 25; delivered May23 25.

Flying Fish, hull 101, schooner yacht, same as above, for W. F. Carey; keel Jan24 25; launched and delivered May23 25.

Margaret Mary, hull 102, schooner yacht, for John Bowers; 58 L.O.A.; 12 beam; 7-6 draft; Red Wing eng; keel Feb3 25; launched June 1 25; delivered June2 25.

Cygnnet, hull 103, schooner yacht, for Paul Hammond; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Feb6 25; launch June 25, est; delivered June 25, est.

Seven Seas, hull 104, schooner yacht, for Van S. Merle-Smith, same as above; keel Feb23 25; launch May/25, est; delivered June/25, est.

Mystic, hull 105, schooner yacht, for Irving Fildridge, same as above; keel Apr15 25.

Diamond W., hull 106, schooner yacht, for Chas. E. F. McCann, same as above; keel Mar 14 25.

Nokomi's, hull 107, schooner yacht, for Wm. A. W. Stewart; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Mar16 25.

Venturer, hull 108, schooner yacht, for Har- old Wesson, same as above; keel Mar18 25.

Mysee, hull 109, schooner yacht, for Dave H. Morris, same as above; keel Mar20 25.

No name, hull 110, schooner yacht, for G. M. Hecksher; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr8 25.

Seafarer, hull 111, schooner yacht, for Parker Corning; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Apr21 25.

Charmian, hull 112, schooner yacht, for Newcomb Carlton; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr23 25.

Shearwater, hull 112, schooner yacht, for F. L. Crocker; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Apr27 25.

No name, hull 114, schooner yacht, for Julius Fleischman, same as above; keel May1 25.

Vo-Ilo, hull 115, express cruiser, Clifford Brokaw, 50 ft over-all; 10 ft beam; 3 ft draft; keel May5 25.

No name, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 SHP each; keel Jan20 25; launch and deliver June/25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmington, Del.

Hull 3496, tug, J. W. Sullivan Co., hull only; 93 ft 6 in LBP; 25 ft beam; 9 loaded draft.

Hull 3497, same as above.

Hull 3498, carfloat, D. L. & W. R. R.; 326 LBP; 40 beam; 5 loaded draft; keel May18 25.

Hull 3499, sister to above.

No name, hull 3500, fireboat for the City of Houston, Texas; 117-6 LBP; 27 beam; 8-6 loaded draft; twin screw; diesel-electric drive; 14 mi speed; two 500 HP Winton 4-cycle diesel engs; Westinghouse generators.

CHARLESTON DRY DOCK & MACHINERY COMPANY Charleston, S. C.

Purchasing Agent: Charles R. Valk.
Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 LBP; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 HPS; keel Nov/24; launched Feb24/25; delivered Oct/25, est.

Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 LBP; 33 beam; 2 ft 11 in loaded draft; 1 Scotch boiler, 11 ft 6 in by 12 ft 3 in; keel Feb25/25; launch May/25, est; delivered Dec/25, est.

COLLINGWOOD SHIPBUILDING CO. Collingwood, Ontario

Purchasing Agent: E. Podmore.
Robt. I. Buck, hull No. 74, bulk freighter, Geo. Hall Coal & Shipping Corp., Montreal; 252 LBP; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface condensing; 700 SHP 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Jan31/25; launch May9/25; delivered May 20 25.

Walter B. Reynolds, hull No. 75, bulk freighter, same as above; keel Feb2/25; launch June6 25, est; delivered June16/25, est.

Robert J. Kernan, hull No. 76, bulk freighter, sister to above; keel Feb5 25; launch June27/25, est; delivered July4/25, est.

CONSOLIDATED SHIPBUILDING CORPORATION Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 180-HP Winton diesel engs.

Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.

Hull 2797, cruiser for R. F. Hoyt, 81 ft long; 2 Wright & Typhoe engs, 500 SHP each.

Hull 2798, cruiser for H. C. Stutz, 65 ft long; 2 180-HP Speedways.

Hull 2799, cruiser for Elliott & Co., 44 ft long; 180 SHP Speedway.

Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150-HP Speedways.

Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300-HP Speedways.

Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300-HP Speedways.

Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO. Philadelphia, Pa.

Purchasing Agent: Ed. C. Grehr.

Malolo, hull 509, express psgr and frt liner, Matson Navigation Co.; 582 LOA; 577 length at water line; 83 ft beam; depth molded to C deck 54 ft; displacement 22,050 tons; 8250 DW T; speed 22 knots regular, 23 knots maximum; 25,000 shaft horsepower; Cramp-Parsons turbines; oil burning B&W water-tube boilers; keel May 4 '25.

Hulls 510-17, 8 steel screws, City of Philadelphia; 500 cu yds capacity; deliver Oct/25, est.

DEFOE BOAT & MOTOR WORKS Bay City, Mich.

Purchasing Agent: G. O. Williams.
Northerner, hull No. 79, wooden cruiser, E. F. Conley-Lansing; 42 ft 10 in long; 10 ft beam; 3 ft draft; 12 mi speed; Scripps E-6 gas engs; keel Feb 1, '25; launch June 20/25, est; deliver July 1 '25, est.

Hull No. 80, steel vessel, U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 210 DWT; 300 IHP; diesel engs; keel Feb 28/25; launched Apr 30/25; deliver July 10/25, est.

Hull No. 81, sister to above; keel Feb 28/25; launch June 15/25, est.

Hull No. 82, sister to above; keel Mar 11/25; launch June 20/25, est.

Hull No. 83, sister to above; keel Mar 12/25; launch June 10/25, est.

Hull No. 84, sister to above; keel Mar 21/25; launch June 10/25, est.

Hull No. 85, sister to above; keel Apr 1/25; launch June 10/25, est.

Hull No. 86, sister to above; keel Apr 10/25; launch June 10/25, est.

Hull No. 87, sister to above; keel Apr 18/25; launch June 25/25, est.

Hull No. 88, sister to above; keel May 5/25; launch June 25/25, est.

Hull No. 89, sister to above; keel June 15/25, est; launch June 25/25, est.

Hull 90, steel patrol boat for U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 12 mi speed; 210 DWT; 300 IHP; diesel engs.

Hull 91, sister to above.

Hull 92, sister to above.

DRAVO CONTRACTING COMPANY Pittsburgh, Pa.

Hulls 372-375, inc, 4 steel barges for Mississippi River Commission, Memphis; 120 ft by 30 ft by 7 ft 6 in; 430 gro tons each.

Hulls 385-394, 10 sand and gravel barges for Keystone Sand & Supply Co.; 135x27x8; 320 gro tons ea.

Hulls 403-404, inc., 2 steel barges, for stock, 100x26x6-6; 135 gro tons ea.

Hull 405, diesel engine towboat, Stewart Sand Co., Kansas City; 120 HP; 25 tons.

Hull 406, diesel engine towboat for stock, same as above.

Hulls 409-412, inc, 4 sand and gravel barges for Ohio River Sand Co., Louisville; 130x30x7-6; 830 gro tons ea.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY

Kearny, N. J.

Purchasing Agent: R. S. Page.
Panamco, hull 82, barge, Pan American Petroleum Co.; 150 LBP; 30 beam; 10 loaded draft; 540 DWT; keel Feb 19/25; launched Apr 14/25; delivered May 12/25.

GREAT LAKES ENGINEERING WORKS

River Rouge, Mich.

Purchasing Agent: Chas. Short.
William C. Atwater, hull 249, bulk freighter, Wilson Transit Co.; 580 LBP; 60 beam; 20 loaded draft; 12 mi speed; 12,000 DWT; TE 2000 IHP engs; 3 Scotch boilers, 13 ft 6 in by 11 ft; keel Dec 23/24; launched Apr 4/25; delivered May 14/25.

Wm. G. Mather, hull 250, freighter, Cleveland Cliffs S. S. Co., Cleveland; 618 LOA; 592 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Feb 10/25; launched May 23/25; deliver July 25/25, est.

No name, hull 251, bulk freighter, Columbia S. S. Co., Cleveland; 618 LOA; 492 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Apr 7/25; launch Aug 1/25, est; deliver Oct 1/25, est.

HOWARD SHIP YARDS & DOCK COMPANY

Jeffersonville, Ind.

Purchasing Agent: Jas. E. Howard.
Algiers, hull 1577, Catamarin type, for Algiers Public Service Co.; 144 LBP; 67 beam on deck; 4 ft 6 in loaded draft; non-condensing engs, 18 inx6ft; 2 fire-tube boilers, 50 inx26 ft; keel Sept 27/24; launched Mar 28/25; deliver June 25/25, est.

New Orleans, hull 1578, sister to above; keel Nov 4/24; launched May 19/25; deliver July 15/25, est.

Union, hull 1579, sternwheel rowboat, for Union Sand & Gravel Co., Huntington, W. Va.; 130 ft LBP; 28 ft beam; 3 ft 6 in loaded draft; non-condensing engs, 15 inx6ft; 3 fire-tube boilers, 44 in. x 22 ft; keel Mar 31/25; launched May 25/25; deliver July 4/25, est.

U. S. Chicot, hull 1580, sternwheel towboat, U. S. Engineers, Vicksburg, Miss.; 108 ft 6 in LBP; 23 ft beam; 3 ft loaded draft; non-con-

densing engs; 15 inx6 ft; 2 fire-tube boilers, 40 in x 22 ft; keel June 10/25, est.

Hull 1581, 15-ton derrick boat hull, for U. S. Engineers, Pittsburgh, Pa.; keel July 15/25, est.

MANITOWOC SHIPBUILDING CORPORATION

Manitowoc, Wis.

Purchasing Agent: H. Meyer.
No name, hull 216, freighter, Rockport Steamship Co.; 470 LOA; 60 beam; 31 depth.
Hulls 217-18, dump scows, Great Lakes Dredge & Dock Co.; 1000 cu yds capacity.

MARIETTA MANUFACTURING CO Point Pleasant, W. Va.

Purchasing Agent: S. C. Wilhelm.
No name, hull 139, ferryboat; 141 ft long; 30 ft beam; 5 ft 2 in draft; tandem comp engs; Western rivers return tubular boilers; keel May 15/24; launched Feb 15/25.

MIDLAND BARGE COMPANY Midland, Pa.

Purchasing Agent: R. C. Will, Sales Manager.
Grace Barrett, steel flush deck barge, Barrett Line, Cincinnati; 225 ft long; 36 ft beam; 8 ft depth; 1500 DWT.

No name, steel wharfboat, Coney Island, Inc., Cincinnati, O.; 225 ft long; 45 ft beam; 6 ft depth; steel superstructure and roof; launch and deliver June 1/25.

MIDLAND SHIPBUILDING COM- PANY, LTD.

Midland, Ontario

Purchasing Agent: R. S. McLaughlin.
Glencagles, hull 14, single deck freighter, Great Lakes Trans. Co., Ltd., Midland, Ontario; 582 LBP; 60 beam; 20 loaded draft; 11 knots speed; 12,000 DWT; TE engs, 2800 IHP; 3 Scotch boilers, 15 ft 3 inx11 ft 6 in; keel Mar 16/25; launch Aug 19/25, est; deliver Oct 1/25, est.

NASHVILLE BRIDGE COMPANY Nashville, Tenn.

Purchasing Agent: Leo E. Wege.
Chaniberlin, hull 91, steamboat hull, principals not named; 140 LBP; 31 beam; 5 loaded draft; keel Aug 15/25, est; launch and deliver Oct 25/25, est.

Nashville B., hull 92, diesel towboat, builders' account; 110 LBP; 28 beam; 5 loaded draft; 400 IHP; diesel engs; keel May 1/25; launch Sept 15/25, est.

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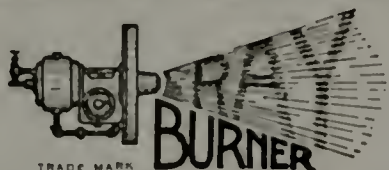
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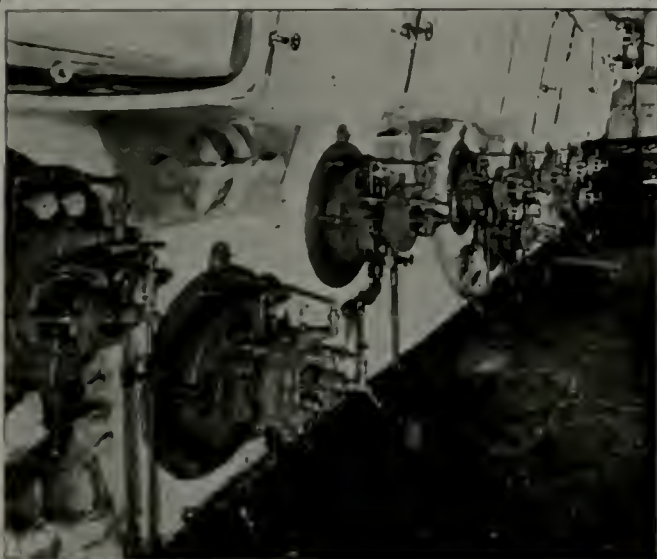


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Fuel tests have just been completed at the Naval Fuel Oil Testing Station at Philadelphia. Results of this test will be gladly mailed to anyone interested.

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311 California Street
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PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

NEW RCA PACIFIC COAST MARINE HEAD

ON the first of May the management of the marine department of the Radio Corporation of America for the Pacific Coast and Hawaii was taken over by G. Harold Porter, replacing Arthur A. Isbell, who joined the New York office of the company.

Mr. Porter is a native of Carbon-dale, Pennsylvania, and in his early youth became interested in telegraphy and worked as an operator for several large Eastern railroads, later entering the office of the Baltimore & Ohio Railroad Company as chief clerk. In 1906 he left the railroad company to become traffic manager of the Tyler Lumber Company. In 1913 he joined the Marconi Company and held various executive positions under that company and the Radio Corporation of America after its formation. Before coming to San Francisco he was general superintendent of the marine department of the company, with offices in New York.



G. Harold Porter.

SEATTLE REPRESENTATIVE

Karl H. Scheel, Seattle naval architect, has been appointed the Northwest distributor for Goodrich Cutlass bearings.



Unfurling of first Panama Mail flag on board steamer Venezuela at San Francisco, June 18. Left to right—Captain C. W. Gilbert of the Venezuela, Miss Grace M. Fanelli of the passenger department, and E. T. Ford, president of the Panama Mail Steamship Company.

Pacific Coast Shipping Developments

THE past month or six weeks have seen many changes and readjustments in Pacific Coast shipping companies, and the next few months will probably bring many more changes, all of which we hope will put Pacific Coast transportation facilities and Pacific Coast ship operation on a firm basis for the further development and prosperity of the American merchant marine on the Pacific.

Panama Mail Steamship Company

One of the changes of importance, and one involving several of the oldest and best established of American steamship companies, is the organization of the Panama Mail Steamship Company. This organization followed a meeting of the stockholders of the Pacific Mail

Steamship Company on June 11, following the sale of five Shipping Board trans-Pacific liners to the Dollar Steamship Lines. During this meeting the stockholders decided to accept the offer of W. R. Grace & Company to retire 150,000 shares of common stock and their entire bonded indebtedness of \$1,000,000 in exchange for the steamers Colombia, Ecuador, and Venezuela, operated in the intercoastal service, and the motorships City of San Francisco and City of Panama and steamers San Juan and Corinto, operated between ports of California and Central America, together with certain assets and the good will of the Pacific Mail Steamship Company in connection with these two services.

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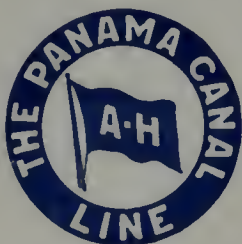
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Norton, Lilly & Company, general agents.
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SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

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GARLAND STEAMSHIP CORP.

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240 Battery street. Phone Kearny 4100.

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SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

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FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

SAILINGS—Gulf. From Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Garfield 5000.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland,

Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

508 California street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York, Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,
311 California street. Phone Garfield 6760.
285 Bacon Bldg., Oakland. Phone Lakeside 3580.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
F. C. Bennett, Pacific Coast manager.
110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

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Henry Dearborn, agent.
Mutual Life Bldg. Phone Eliot 8120.

FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Eliot 2450.

FREIGHT ONLY.

The Panama Mail Steamship Company will be operated as a subsidiary of W. R. Grace & Company of San Francisco. E. T. Ford, general manager for the Grace interests on the Pacific Coast, is president of the new company. Daulton Mann is general manager; C. C. Mallory, assistant manager; Captain Ryland Drennan, port superintendent in charge of operations; William A. Young, Jr., general passenger agent; and Guy E. Buck, general freight agent. Offices of the new company will be on the ground floor of the Oceanic Building, 2 Pine street, San Francisco. The first Panama Mail house flag was unfurled on June 18, with the sailing of the steamer Venezuela from San Francisco.

Pacific Mail Steamship Company

The name of the Pacific Mail Steamship Company and the goodwill of that company in the trans-Pacific service, together with the tanker Solano and the terminal properties at Hankow and Yokohama, all cash on hand, and liquid assets were sold to Herbert Fleishacker and associates of San Francisco on a basis of \$10.50 per share for 150,000 shares and \$450,000 additional to the Grace interests. It is not known what Mr. Fleishacker and his associates intend to do with their share of the old Pacific Mail Company. However, with the announcement that Thomas A. Graham, formerly vice-president and general manager of the Pacific Mail, scheduled to return to San Francisco in July, there is a great deal of speculation along California street as to the possibility of the Pacific Mail Company again launching out into the trans-Pacific trade.

American-Hawaiian Steamship Company

Another Pacific Coast shipping concern which has changes to report during the month is the American-Hawaiian Steamship Company. At a special meeting of the board of directors on June 4, Roger D. Lapham was elected president of the



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Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Vancouver, Seattle, San Francisco, Los Angeles and Philadelphia, New York, Boston, Portland, Me., Baltimore and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

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LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. From Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

Lobby 4 Central. Phone Elliott 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Office, 619 Second Ave.
Freight and Operating Office:

Pacific Steamship Company.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—Intercoastal.

Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

M. O. Beggs, Agent.

4421 White Building. Phone Elliott 6127.

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SAILINGS—Intercoastal.

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Sudden & Christenson, agents.

Arctic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

Spokane street terminal. Phone Elliott 6657.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

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St. Phone 874-891.

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GARLAND STEAMSHIP CORP.

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541 South Spring street.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street. Phone Main 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. From Vancouver, Seattle, Tacoma, Portland, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone Metropolitan 6140.

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SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone Vandyke 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

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Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

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Freight Offices: Pacific Steamship Company.

company in place of Cary W. Cook, who was elected to the position of chairman of the board. J. E. Cushing was elected treasurer. Shortly thereafter, President Lapham of the company announced the purchase of six freighters from the Atlantic & Pacific Steamship Company which had been operated by Grace Steamship Lines. These vessels are the Santa Clara, Santa Malta, Santa Olivia, Santa Barbara, Santa Paula, and Santa Rosa. The steamers will be renamed the Columbian, Kansan, Montanan, Hawaiian, American, and Oregonian and will be transferred to the new owners at San Francisco and New York as fast as they complete their present schedules.

The steamers purchased are almost identical in speed and type to a number of the units of the present fleet of the American-Hawaiian Steamship Company and will bring the number of steamers in the company's fleet up to twenty-four. It has not been announced in just what service the newly acquired vessels will be employed.

MATSON INCREASES FREIGHTER FLEET

During June the Matson Navigation Company started in their San Francisco-Hawaii service the first of two freighters, Mount Clinton and Mount Carroll, recently purchased from the United American Lines. The Mount Carroll has been renamed the Maunawili. The Mount Clinton is now undergoing inspection at San Francisco.

FLETCHER MONSON JOINS GENERAL ENGINEERING

Fletcher C. Monson, for six years secretary of the Hanlon Dry Dock & Shipbuilding Company, Oakland, California, has recently joined the organization of the General Engineering & Drydock Company of Oakland and San Francisco. Mr. Monson was with the Hanlon company for six years.

PACIFIC COAST PORT ASSOCIATION

The twelfth annual convention of the Pacific Coast Association of Port Authorities was held at San Francisco, June 18, 19, and 20. Representatives of all the ports on the Pacific Coast from Vancouver to San Diego were present, and a number of interesting papers and discussions were presented.

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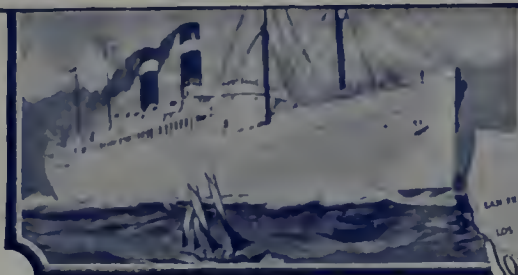
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TRANSMARINE LINES

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2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles,
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UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore,
Savannah and Los Angeles, San Francisco,
Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma,
San Francisco, Oakland, Los Angeles, San Diego,
and New York, Philadelphia, Norfolk and Baltimore.

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AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
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SAILINGS—Weekly from Seattle, Tacoma, Portland,
Astoria, Oakland, San Francisco,
Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland,
Astoria, Seattle, Tacoma, Oakland, San Francisco,
Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver,
Seattle, Portland, San Francisco, Los Angeles and New York,
Providence, Philadelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle,
San Francisco, Los Angeles, San Diego and New York,
Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles;
also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma,
Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia,
New York and Boston.

SAILINGS—Gulf. From Vancouver, Seattle, Tacoma,
Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston,
New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles,
San Francisco, Oakland, Portland, Seattle and Tacoma;
monthly to Jacksonville, Fla.

PANAMA MAIL STEAMSHIP CO.

Norton, Lilly & Co., agents.
Yeon Building.

FREIGHT ONLY.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanilla, San Jose de Guadalupe,
Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York.

Westbound calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guadalupe, Acapulco, Los Angeles and San Francisco.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
1008 Spalding Bldg. Phone Broadway 2503.
FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound,
Portland and Columbia River, San Francisco, and Los Angeles to New Orleans,
Mobile and Caribbean Sea and Gulf of Mexico ports as inducement offer, via Panama Canal.
Call at Oakland westbound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.
Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego,
Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

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602 Hastings St., West. Phone Seymour 7929.
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SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

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Phone Seymour 8420.

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Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

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402 Pender street, West. Phone Seymour 8680.
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Regular sailings between Vancouver, B.C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

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602 Hastings St., West. Phone Seymour 7929.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles;
also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.
Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. From Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Galveston, New Orleans, and Mobile.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.
413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports, San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports, Panama Canal. Call at Oakland westbound.

cific Coast ports, has completed arrangements for a Pacific Coast, Mediterranean service. The line secured for this route is the Nava-gazione Libera Triestina. Regular sailings have been scheduled to the Mediterranean ports of Trieste, Leghorn, Genoa, Naples, with calls at Spanish ports.

SAN FRANCISCO WAREHOUSE FIRMS CONSOLIDATE

Offices of the Associated Terminals, the De Pue Warehouse Company, A. C. Worthington & Company and the Occidental Forwarding Company have been consolidated on the second floor of the Bay Building, Market and Main streets, San Francisco. Gerald Fitzgerald, president of the Associated Terminals, and W. E. Jones, vice-president, have been elected to similar positions in the De Pue Warehouse Company. Thomas James, former operating manager of the Pacific Mail Steamship Company, is traffic manager. The De Pue Warehouse Company has thirty-three warehouses in Northern California. The Associated Terminals also operate as stevedores, ship clerks, and steamship agents at Los Angeles.

CHASE COMPANY MOVES OFFICES

We have received an announcement from the Chase Company, Inc., of Waterbury, Connecticut, that on July 1 they will move the offices of the Chase Metal Works and the Waterbury Manufacturing Company to 138 Lafayette street, New York City. Complete stocks of Chase brass in sheet, rod, wire, and tubing will be carried at this address for the convenience of the trade.

PACIFIC MARINER NOW BAY PILOT

Captain John G. Moreno, one of the best known commanders on both sides of the Pacific for many years, on June 5 was appointed a San Francisco bar pilot to succeed Captain M. A. Anderson, retired. Captain Moreno has been identified with the Pacific Mail Steamship Company for thirty-five years at different times. He was, until recently, in command of the President Taft when illness compelled him to remain on shore. Captain Moreno was with the Army Engineers from 1909 until 1915, and he dredged the Columbia River bar from a depth of twenty-four to thirty-nine feet. He then went to Baltimore and superintended the construction of the government dredge San Pablo, bringing the dredge to this coast in 1916,

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ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transshipment at Hull.

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(Operating U. S. S. B. vessels.)
112 Market street. Phone Sutter 7640.

FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Weekly from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.
Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels.)

Sudden & Christenson, agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.
SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning direct to Portland.

OSAKA SHOSEN KAISHA

Williams, Dimond & Co., Agents.
310 Sansome St. Phone Sutter 7400.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
549-51 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Twice a month between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
222 Robert Dollar Bldg. Phone Garfield 3899.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.

City ticket office: 1300 Fourth Ave.

General offices: 1519 R. R. Ave. So.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.

Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

American Bank Building. Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

Pier 6.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

remaining in command until 1918, when he joined the naval reserve forces. In 1919 Captain Moreno went back to the Pacific Mail Company and remained in that service until illness forced his retirement. During the time that Captain Moreno was with the Mail company he served on practically every vessel operated by the company.

NEW DISTRIBUTING PLANT FOR GENERAL PETROLEUM

With an extensive program of athletic events, musical program, and air circus, the new million dollar distributing plant of the General Petroleum Corporation was formally opened at Oakland, California, on June 20. The plant is located on the Parr Terminal and is the distributing center for the General Petroleum Corporation for Northern California.

Fred D. Parr, founder of the Parr Terminal, whose efforts are responsible for not only the General Petroleum plant but for many additional developments on the Oakland waterfront, was the guest of honor. We notice that one of the enthusiastic Oakland newspapers terms Mr. Parr an "Industry Baron." From our personal knowledge of the energy and democracy of Mr. Parr, we believe the term "Industrious Citizen" would better suit the man and his tastes. Despite handicaps during his seven years tenure of the property he holds on the Oakland waterfront, Mr. Parr has consistently overcome the obstacles to bring improvements to his own projects and those of his tenants.

W. P. Durkee is district manager of the General Petroleum Corporation for Northern California and Harry La Rue is resident manager at the Oakland plant.

The plant has a storage capacity of fifteen million gallons of gasoline and ten million gallons of distillate and crude oil and has facilities for loading tank cars as well as for delivery to and from vessels at the dock. A concrete wall 30 feet high surrounds the plant as protection in the event of an explosion. The plant is further protected against fire by a Foamite installation, which is the largest on the Pacific Coast.

LUCKENBACH SPEEDS UP SERVICE

Effective with the sailing of the Luckenbach intercoastal freighter Dorothy Luckenbach from Boston, June 16, the schedule of the Luckenbach weekly steamers from Boston, Philadelphia, and New York provide for 19½ days' service from

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.

(Operating U. S. S. B. vessels.)

701-02 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yoko-

United States Government Combination Freight and Passenger Services From Pacific Ports

American Oriental Mail Line

Trans Pacific Service from Seattle to
Yokohama, Kobe, Shanghai, Hong Kong, Manila

A sailing every twelve days by one of the five great ships

PRESIDENT JACKSON

PRESIDENT JEFFERSON

PRESIDENT MADISON

PRESIDENT GRANT

PRESIDENT McKINLEY

Fastest Service across the Pacific from the United States

Direct Freighter Service

from Everett, Tacoma, Vancouver and Seattle
to Japan, Shanghai, Dairen, Taku Bar and Tientsin

Two sailings a month

Also regular sailings direct to
Foochow, Amoy, Swatow, Cebu and Iloilo

Operated by

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General Offices: 1519 RAILROAD AVENUE SOUTH, SEATTLE, WASH.
City Ticket Office: FOURTH AT UNIVERSITY, SEATTLE, WASH.

United States Shipping Board Fleet Corporation

ORIENTAL

hama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone Broadway 7900 and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Weekly from Los Angeles and San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick & McPherson, Agents.

Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.

541 So. Spring street.

FREIGHT ONLY.

SAILINGS—At frequent intervals from Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone Trinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

PORTLAND

AMERICAN ORIENTAL SERVICE

A. M. Gillespie, Inc., agent.

Board of Trade Bldg. Phone Broadway 4348.

SAILINGS—Monthly to ports of Japan and China as inducements offer.

MITSUMI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)

702 Wilcox Building. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)

Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning direct to Portland.

PORTLAND-ORIENT LINE

Wallem & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

203-4 Wilcox Building. Phone Bdwy. 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

New York, 22½ days from Philadelphia, and 27½ days from Boston to San Francisco, with corresponding deductions in the schedule to other Pacific Coast ports of call, which include Seattle, Tacoma, Portland, Oakland, and Los Angeles.

PERSONNEL CHANGES AMONG PACIFIC COAST OPERATORS

H. A. Jeans of San Francisco has taken over the charter department of the General Steamship Corporation at Portland, Oregon, succeeding E. J. Griffith.

C. F. Booth, formerly assistant general freight agent, has been appointed freight claim agent of the Los Angeles Steamship Company, 408 Central Building, Los Angeles, to carry out an intensive program of freight claim prevention and adjustment.

H. N. Thomas has been appointed assistant general passenger agent of the Dollar Steamship Line with headquarters at the Robert Dollar Building, San Francisco.

B. G. Sherwood, dock superintendent at Los Angeles harbor for the General Steamship Corporation, agents for several shipping lines, has been promoted to freight traffic manager with offices in Los Angeles.

Walter Johnstone, who has been the assistant general passenger agent for the Pacific Mail Steamship Company, has joined the forces of the Dollar Steamship Line. Mr. Johnstone is rated as one of the ablest trans-Pacific passenger men in the steamship business.

SHIPPING OFFICIALS

H. C. Cantelow, vice-president of the Luckenbach Steamship Company at San Francisco, has gone to New York, where he will confer with Edgar F. Luckenbach and other officials of the company.

James Fowler, Lloyd's surveyor for the State of Washington, left Seattle June 18 for a trip to his old home in Scotland, after an absence of twenty years. He will tour Great Britain and the Continent before returning to Seattle.

Leigh C. Palmer, president of the Emergency Fleet Corporation, visited the Pacific Coast ports en route to the National Foreign Trade Convention at Seattle. Mr. Palmer made a survey of the Shipping Board managing operators and port and terminal facilities at the various ports.

Henry W. Poett, president of Williams, Dimond & Company of San Francisco, recently returned from a five months' tour of England and the Continent. Mr. Poett was accompanied by his wife and daughter

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.

Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp, Rotterdam.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

433 California street. Phone Sutter 6717.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports, direct to Hamburg, Hull, Gothen-



Fortnightly sailings with Giant Liners via the Southern Route of Smooth Seas and Sunshine—

Direct from Los Angeles to Hawaii

The round-trip from Los Angeles is frequently made for \$278.50 and up—according to steamship and hotel accommodations selected—covering every expense ashore and afloat.

Seven restful, intensely interesting days of recuperation for mind and body on the voyage to Honolulu—then a week of sightseeing, including a 3-day side trip to Hilo to see the Volcano, Lava Lakes, Giant Fern Forests and other wonders in Hawaii National Park—and finally the delightful return voyage to Los Angeles.

Three weeks—or as much longer as you can stay—for a supremely enjoyable vacation in this eternally enchanting land.

NEXT SAILINGS

July 4—S. S. Calawaii
July 18—S. S. City of Los Angeles
August 1—S. S. Calawaii

Send for Booklet

LOS ANGELES STEAMSHIP CO.

For Passenger Information Address:

517 S. Spring Street, Los Angeles
685 Market Street, San Francisco

For Freight Information Address:

304 Central Building, Los Angeles
Pier 7, San Francisco

\$1200

First Class

\$1200

ROUND THE WORLD

SAN FRANCISCO (or LOS ANGELES, PORTLAND OR SEATTLE), HONOLULU, SAMOA, SYDNEY, AUSTRALIA, JAVA, SINGAPORE, PENANG, COLOMBO, SUEZ, PT. SAID, ALEXANDRIA, NAPLES, GENOA, MARSEILLES, (LONDON \$35.00 Extra Rail), NEW YORK and Choice of Railways Across U. S. Stop-overs.

Oceanic S. S. Co.'s sailings: Ventura, April 8; Sonoma, May 6; Ventura June 10, July 8, August 12, etc. Transshipping at Sydney to favorite Java lines to Singapore; from Singapore splendid Government built steamers of Dollar Line to Marseilles or New York. \$140 extra via Panama Canal.

Standard Service Throughout

**Honolulu, \$220 Round Trip, First Class
Sydney and Return, \$565**

Book Now!

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2 PINE STREET

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NORTH PACIFIC COAST LINE

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The Pioneer Refrigerator Service

Fast Freight and Passenger Service between San Francisco, Los Angeles Harbor, Portland, Astoria, Seattle, Victoria and Vancouver, and Liverpool, London, Rotterdam, Antwerp and Hamburg.

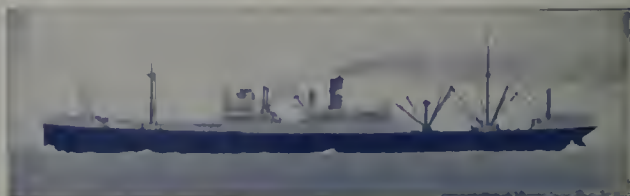
All Vessels Equipped With Refrigerators for Transportation of Fish, Fruits and Other Perishable Cargo

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San Francisco, Cal.



UNITED KINGDOM--CONTINENTAL EUROPE

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Service between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, sub-agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
Fortnightly from Vancouver and Los Angeles to United Kingdom.

FURNESS LINE

Furness, Withy & Company, Ltd.
Furness (Pacific), Ltd.
710 Balfour Building. Phone Sutter 6478-6479.
PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
Fortnightly from Vancouver and Los Angeles to United Kingdom and Continent.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.
SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
351 California street. Phone Sutter 6427.
FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, general agents.
260 California street. Phone Douglas 8040-1-2.
FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Co., general agents.
312 Pine street. Phone Sutter 3700.
PASSENGERS AND FREIGHT.
SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.
240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Mediterranean Service.
Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)
120 Market street. Phone Douglas 7510.
PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.
FREIGHT ONLY.

SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.
For passengers, Phone Sutter 46.
PASSENGERS AND FREIGHT.
SAILINGS—North Pacific-European Service.

Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

SEATTLE

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.
Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.
823 Alaska Building. Phone Elliott 9104.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Gothenburg, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Service between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
General Steamship Corporation, agents.

Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)

Furness (Pacific), Ltd.

Burchard & Fiskens, Inc., agents.

705 Arctic Building.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
Fortnightly from Vancouver and Los Angeles to United Kingdom.

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.

SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.

Dexter-Horton Bldg. Phone Elliott 1464.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Company.

Hoge Building. Phone Elliott 5412.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.

Colman Bldg. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Mediterranean Service.
Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)

204-206 Rainier Building. Phone Elliott 4944.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

and the trip was in the nature of a vacation.

J. Van Muer, manager of the freight department of the joint service of the North Pacific Coast Line, Holland-America Line, and the Royal Mail Line, left for Europe during June on a combined pleasure and business trip.

Chester B. Kellogg, vice-president of the Munson Steamship Company, was another recent visitor to the Pacific Coast. While on the coast Mr. Kellogg will confer with McCormick Steamship Company officials, agents for the Munson-McCormick intercoastal line, and in company with Charles L. Wheeler, vice-president and general manager of the McCormick Steamship Company, will make an inspection of the McCormick terminals and will conduct a survey of conditions generally on the coast.

E. D. Cimpher is another old Pacific Mail man to join the Dollar Steamship force. Mr. Cimpher is in the passenger department of the Dollar Steamship Line.

FOAMITE GIVES DIRECT SERVICE

Since April 1, 1925, the Foamite-Childs Corporation has been functioning direct with the marine industries on all matters connected with Foamite Marine systems. This work is carried on through the marine department at 128 West Thirtieth street, New York City. Mr. Eads Johnson, marine architect and engineer of New York, is now manager of the marine department.

OBITUARY

It is with deep regret that we report the death on May 21 of Lorrin Way Ferdinand, founder and head of the firm of L. W. Ferdinand & Company, importers and manufacturers of marine glues and linoleum cements.

Mr. Ferdinand began in business in December, 1873, at the age of 19, when he purchased a hardware store in Boston. At that time he established the firm which ever since has borne his name. Mr. Ferdinand took over the agency for Jeffry's marine glue and later began the manufacture of waterproof linoleum cement, these two specialties finally permitting him to close out the hardware end of the business. During his long and active career Mr. Ferdinand enjoyed the high esteem and full confidence of his business and personal friends.



"In summer Honolulu is gloriously beautiful," writes Enrique D. Jackson in *"World Traveler,"* "with its distant high green hills, a blue Hawaiian sky and the avenues bordered in flowering trees of giant size, the scarlet royal poinciana, blue jacaranda and pink and golden shower. And everywhere the tall green palms with gray trunks. There are many varieties of hibiscus, the rose of Hawaii. In former times of legend and story it was this bloom that Hawaiian girls placed in their hair in days of courtship.

"In no other place in all the world does one arrive in such a happy sense of expectation as at Honolulu. The city is quite modern, but there is a feeling that it is not too much so, perhaps due to the entire lack of any urge or hurry."

See HAWAII this summer! Enjoy outrigger canoe and surfboard riding at Waikiki as well as revel in the wondrous summer beauty of the Islands. Matson Line Inclusive (All-Expense) 21-Day Tours range from \$267 to \$381, each person. Write us for literature. We will plan your trip if you wish.



MATSON

Navigation Company
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Owners of wooden steamships which are not paying reasonable profits under present conditions will find conversion to Diesel power a commercially practical and very attractive proposition. Our Engineers will gladly and without charge submit cost data and performance guarantees if we are given necessary information. Ask at least for booklet "Achievements in Motor Ships."



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(Continued from Page 312)

also its place in the selling of America abroad.

Great is the influence of American periodicals whose circulation in foreign countries is more far reaching than is imagined by the majority of people.

Business Organizations

Then there are the international organizations, such as the International Chamber of Commerce, to which I have already referred and which has its headquarters at Paris; the Pan-American Union in Washington; the Pan-Pacific Union in Hawaii. The participation of the United States in such organizations has helped bring American aims, ideals, tastes, and interests to the attention of thinking people all over the world.

Prior to 1913 our records indicate the existence of but three American chambers of commerce in foreign countries, the chambers at Paris, at Berlin, and at Constantinople, the latter organized in 1912. Today there are thirty-one active chambers of this character, twenty-three of which, including all of the most important, are members of the Chamber of Commerce of the United States. The growth in membership of the individual chambers has been equally striking. Records of the United States Chamber indicate very close to 7800 firms in the membership of the twenty-three American chambers abroad that are members of the National Chamber. The 7800 include a good many foreign concerns that handle American trade. These foreign concerns that are associate members of our American chambers of commerce are a force in mutual understanding between us and the foreigners. In addition, the memberships in chambers of commerce in our outlying possessions indicate in the neighborhood of 1750 firms and individuals who are members of local chambers in the Philippines, Porto Rico, Hawaii, Alaska, Guam, and the Virgin Islands.

Organization Activities

The activities of these organizations are diversified and important, their scope depending in large measure on the size of the local American colony and on the specific purposes for which they may have been organized. Practically all of the more important chambers issue periodical house organs, interesting and informative journals dealing with American interests and problems in their parts of the world. The chambers in London and Paris issue directories of all American firms and individuals known to be located in their cities. The chambers maintain American interests and represent them to the authorities of the countries where they are located, and endeavor to promote the sale of American goods by securing local agents for firms in their memberships. Such organizations are a significant force in selling America to the world.

A very recent development is the tendency of American chambers in certain countries or regions abroad to combine for the better attainment of their objects. American chambers in China have been associated in this manner for several years, as have the chambers in Hawaii. There is frequent talk of an amalgamation or association of the chambers in Brazil, and a recent bulletin from the Far East announces the formation, at Manila, under the auspices of General Wood and American interests in the Philippines, of the American Far Eastern Chamber of Commerce, in which the Associated American Chambers of Commerce of China, the American Merchants' Association of Tokyo, and the American Chamber of Commerce of the Philippine Islands, are to unite on questions of common interest.

Another factor is that the American foreign trader today has, through the Foreign Credit Interchange

Bureau, which was fostered by the National Credit Men's Association, an agency for the securing of credit information and thus safeguarding his transactions, second to none in the world.

Throughout a number of the leading American institutions of learning, there are intelligently conducted courses in foreign trade; notably, Harvard and Georgetown universities.

These things are illustrative of the very definite progress that America is making towards not only developing her foreign trade, but in the direction of ultimately winning the good will of the outside world. I believe we are making genuine progress towards the developing of a foreign trade sense.

American Responsibility

Upon America rests the major responsibility of world leadership. It means, therefore, that we must think in terms broader than our own local immediate interests. Every man must, of course, give the closest attention to his own personal affairs, but that need not prevent his thinking of the relationship of his personal affairs, of his immediate concerns, to the concerns of his fellows and to the world at large. We cannot escape our individual obligation in America. Every one of us is endowed with equal rights, with equal opportunities and with equal responsibilities. We must pick our leaders and support them, and we must realize that we cannot successfully conduct our own enterprises unless the general conditions surrounding them are sound. So, when I speak of the responsibility of world leadership, that responsibility comes directly home to every individual American citizen, and I believe there is an especial duty imposed upon us of the Pacific slope. On this fringe of our continent, we represent the outer edge of occidental civilization in its westward march around the globe, now face to face with the Orient. Here on the Pacific the great drama is in its opening stages. Development will be very rapid, and we who are here must take the lead in its progress. We must try sympathetically to view the interests of the people with whom we are face to face. We must interpret them to the occidental world and we must interpret the occidental world to them; and so there rest upon us very great responsibilities.

America's Opportunity

Every great task is also a great opportunity.

Fortunately, we have here the stimulus of magnificent natural environment and the most enspiriting climatic conditions. Behind us we have the great mass of our own people. To the north of us is a people who speak the same language and whose ultimate ideals are in harmony with ours. We are part of the great English speaking world. The English speaking race spreads more broadly over the world than any other and must be bound closer and closer in sympathetic understanding. We must rise to our responsibility, and so it seems to me that in selling America abroad the greatest of all considerations is that of what is America within herself. In proportion as we deal intelligently with our own affairs, shall we be judged favorably or unfavorably by the world at large. What we are, as expressed by the things we do, is what will count the most.

What America is within herself is the value that will be put upon her by the world at large. Emphasis must be upon our strength. Generosity must emanate from a foundation of great power, and not be a mere cloak for weakness.

And so in selling America abroad let it be in the spirit of good will, of generosity born of strength and adequacy for the fulfillment of our great destiny.

Point to Point Service

—without delay—without relay! On a recent trip the operator of the Union Oil tanker "LA BREA," a vessel equipped with a Federal C-W marine set, was able to get his nightly position or "TR" report to the owners daily—*direct without relay!* Think of the time saved—the excellent operation of the Federal C-W equipment.

Radiograms to and from ships equipped with Federal C-W marine sets are handled over our *own lines of communication* by a thoroughly efficient, radio trained organization. The responsibility for accuracy—for speed—for delivery—rests with *one* company. Think of the money saved because of the reduction of land line and cable tolls.

The service that follows the installation of each Federal marine set is worth thinking about, too. For a low rental which covers the installation complete we maintain the equipment in first class condition, assign radio operators, handle all accounts and licensing—in short, shoulder *all* your radio responsibilities.

Federal service stations are now maintained at San Francisco, Los Angeles, Portland, Seattle, New York and other ports.

Further details—gladly!

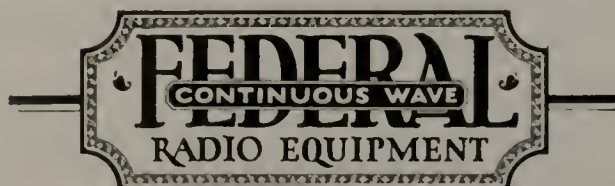


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Kohler Automatic Power and Light Plant as installed on S. S. Maui, Matson Navigation Co., San Francisco. S. S. Matsonia, sister ship to the Maui, is similarly equipped. Inset: S. S. Maui

A reliable auxiliary electric plant —with no storage batteries

HERE are some of the reasons why steamship lines are adopting the Kohler Automatic Power and Light Plant as an auxiliary source of electric current for lighting and radio operation:

(1) Exceptional reliability—the prime consideration—insured by sound engineering and scrupulously fine construction; (2) *no storage batteries*, except a small starting battery for automatic operation; (3) 110-volt direct current; (4) instant availability, at all times, of full rated capacity; (5) simplicity and economy of maintenance; (6) saving of space due to the absence of batteries.

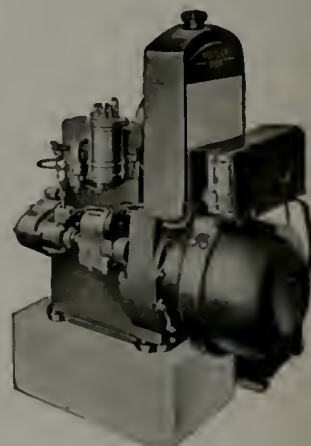
Kohler Automatic marine installations are steadily increasing in number and importance as the proof of superior performance

becomes known. Many lines have bought one Kohler Automatic after another, replacing former equipment. These plants are used not only for emergency lighting and radio but also for service in port or dry dock when the ship's generators are idle.

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There are Kohler Automatic models of 800-, 1500-, and 2000-watt capacity. The 2000-watt unit is used in many of the larger installations.

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PMR-35

Pacific Marine Review

The National Magazine

of Shipping

AUGUST, 1925



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PACIFIC AMERICAN
SHIP OWNERS' ASSOCIATION

Official Organ
SHIP OWNERS' ASSOCIATION
OF THE PACIFIC COAST

Maybe your welding problem is unique



PERHAPS a new welding method will have to be developed. Possibly the problem will need some engineering thought. It is even conceivable that competent welders will have to be selected and organized into a department.

If you have such a job on hand you will want advice from someone who is more than an expert welder. You can get this kind of help from a Linde Service Supervisor.

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NOT LONG AGO a piping contractor had one of those jobs that was going from bad to worse. He was discouraged and ready to quit. Furthermore, the customer was ready to have him quit. A Linde Service Supervisor appeared on the scene. He recommended a better type of welded joint. This was adopted. He suggested training a crew of welders. He outlined a plan for organizing the work; and then he withdrew. The job was finished—completely satisfactory—and ahead of time. We quote from the contractor:—

"... In these days of so much talk of service and so little except talk, the real service you have rendered to us, to our customer and, incidentally, to the general good of the welding business, is refreshing."

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Under the Burmeister & Wain System there were up to March, 1925, put into actual service 172 Motorships totaling 916,621 gross tons and 511,705 I. H. P. No engine built to this system has ever been removed or replaced.

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TWO OCEAN RACES

YESTERDAY
Racing China Tea
Clippers

(From painting by Patterson)

TODAY

Four San Francisco yachts starting from the Golden Gate to Tahiti, 3660 miles, the longest yacht race ever attempted. This race was won by Mariner in the remarkable time of twenty days.

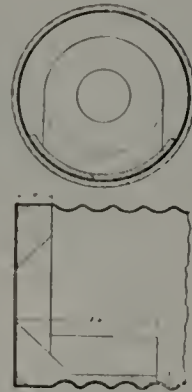
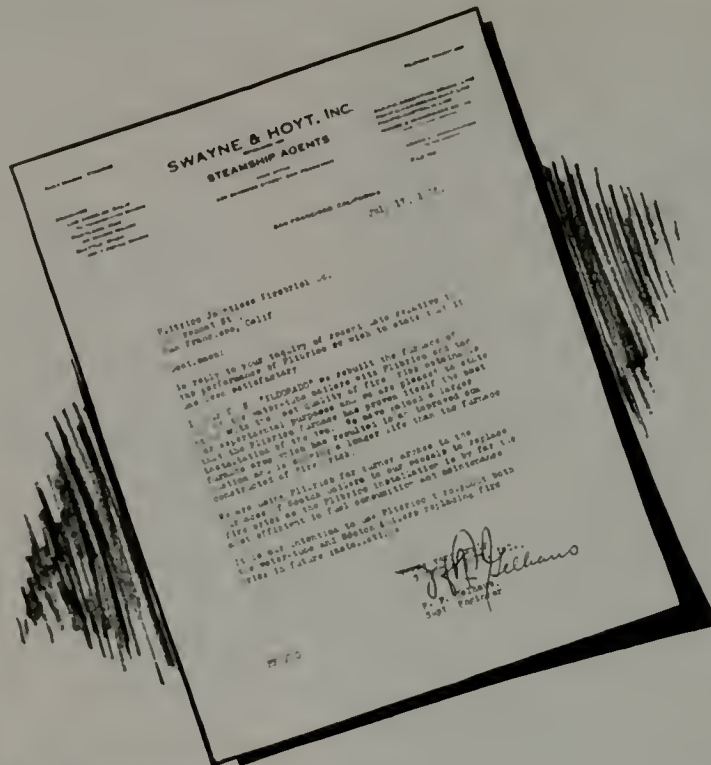
The Earth may not see such ships again,

But she still has some of that race of men.



Start of SAN FRANCISCO to TAHITI Race
The longest Yacht Race ever Sailed, June 10th, 1925

(Photograph by Swadley)



How a Plibrico front is installed in the furnace of an oil burning Scotch Marine Boiler. A 2-inch layer along the bottom accelerates combustion.

PliBRICO FURNACE LINING outlasts firebrick!

Reg. U. S. Pat. Off.

... proved on the El Dorado

ON the El Dorado, shown below, one furnace was built of the highest quality firebrick—another of Plibrico, the jointless furnace lining. "The Plibrico furnace has proved itself the best installation of the two"—that's what Swayne & Hoyt, Inc., say in the letter above.

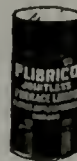
Hundreds of other prominent ships have found that monolithic Plibrico lasts many times longer than firebrick, that it keeps excess air out of the furnace, and that it can be installed cheaply by ordinary labor.

Write for your copy of the free book, "Refractories and Furnace Design", which tells the money-saving story in detail.



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Bernard N. De Rochie,
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Shipowners' Association
of the Pacific

Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager.

Pacific Ocean Trade

CONVENED at Seattle, great seaport of the Pacific Northwest, the Twelfth National Foreign Trade Convention naturally stressed the commerce of America with the Pacific Ocean area. Chinese, Japanese, Philippine, and other business men came representing large commercial interests to present their various viewpoints and participate in discussions on the trans-Pacific transportation and trade problems.

All of these men were optimistic in their forecast of future growth, and indeed the figures of growth during the last twenty years tend toward optimism, as is shown by the following extracts from some of the talks: "In the past fifteen years Japan's purchases from the United States have increased one thousand per cent." "There were twenty-four American firms and four hundred and ten resident Americans in China in 1882 and by 1925 the number has increased to six hundred American firms and twelve thousand American citizens." "American trade with China has increased four-fold in the last twenty years."

This growth entails larger responsibilities. America must furnish more capital for Japan and China. She must work for mutual understanding and for better means, at lower rates, of news and commercial communication across the Pacific. Wider opportunities must be provided in America for Oriental students.

As we write, the situation in China seems to be clearing up. All trans-Pacific steamship lines are booked full on freight and passengers. The problem before us in this area is to get our share of the business and hold that share. One of the most important factors in doing this is good communication at reasonable cost. This fact is stressed with great emphasis by V. S. McClatchy in his great speech on trans-Pacific communication, closing as follows:

"The commerce on the Pacific will probably exceed in time the commerce on the other oceans of the world, and the bulk of it will probably be long retained by those countries which establish firmly their interest therein during the next few decades.

"Study of the facilities for communication for news and commercial messages now available across the Atlantic indicates what is needed in our interest on the Pacific; and the example of Great Britain, Australia, and Canada, and our preliminary experiments with naval radio transmission show how the desired results can be secured.

"Congress should be asked to make permanent the present authorization for use of naval radio across

the Pacific for transmission of news report at a low word rate, such authority to be withdrawn on any circuit when private American companies are prepared to furnish equally good, or better, service at the same rate, under proper guarantee. Congress should be asked also to restore authority for use of naval radio for transmission of commercial messages on the Pacific at commercial rates whenever and wherever privately operated American companies are not able to give the service.

"Radio communication in other countries of the Pacific will probably remain permanently under government control, and the United States should either offer cooperative use of its naval radio facilities in connection with similar facilities of other countries for interchange of news at low word rates, or should insist that private American companies, if given franchises, must provide their share of such cooperative arrangements when offered. A proper presentation of facts would probably secure ready acquiescence of other nations in arrangements of this character.

"None of these things will be done, however, unless and until the merchants of the nation—exporters and importers and the organizations which represent them—foreign trade councils, and chambers of commerce realize the situation and make forcible presentation of it to privately operated communication companies and also to Congress and the proper departments of the government."

Overseas Merchant Marine

AS might be expected, the merchant marine session of the Twelfth National Foreign Trade Convention brought out some constructive ideas on American merchant marine problems. Admiral Leigh C. Palmer, president of the Emergency Fleet Corporation, had the leading paper and presented an excellent analysis of the situation from the standpoint of a government operator charged with the responsibility of turning the job over to private ownership. He showed substantial reduction of operation losses, and stated that an analytical "study of 1200 voyages to all parts of the world in a twelve-month period indicated that the Fleet Corporation losses, including interest and depreciation, would be \$13,500 per voyage, the loss of the average American owner \$4500, and that if the private owner were allowed to operate under British conditions he would break about even." These figures based on best possible conditions indicated that the fleet now being operated by the Fleet

Corporation would require about \$5,000,000 a year, and all American vessels in foreign freight trade about \$7,500,000 a year, subsidy to put them on an even competitive basis. The argument is given in full on page 356 of this issue of *Pacific Marine Review*.

The interesting point of the Admiral's conclusion is the reduction in Federal ideas of the amount of subsidy necessary. This is especially noteworthy in the light of the arguments advanced by Cary W. Cook, chairman of the board of directors of the American-Hawaiian Steamship Company, who, immediately following Admiral Palmer, put forward with great force the idea that acceptance of subsidy by the private American shipowner involved him inevitably in so much red tape regulations and political control as practically to continue the abuses and losses of government operation with the losses underwritten by the private owner. Mr. Cook's solution is the cutting away of all red tape and giving the American shipowner the opportunity to enter the foreign freight carrying trade on the same terms that are enjoyed by his competitors in that trade. Mr. Cook suggests that a substitution of the word "wheel barrow" for the words "ship" or "cargo vessel" in reading speeches on this subject would go a long way toward clearing up popular misconception about our merchant marine.

Admiral Palmer and Mr. Cook are in substantial agreement. Admiral Palmer's figures on reduced subsidy amounts presuppose a condition of operation equal to the best private ownership without subsidy. Mr. Cook knows from long experience that it is impossible to get a grant of subsidy from the Federal government without surrendering to the government rights and privileges which are of more value than the subsidy obtained. As handled by Admiral Palmer and indeed by all who handle the subject from the Shipping Board viewpoint, subsidy is not a cure for the ills of the American merchant marine, but is simply a temporary expedient to induce American citizens to buy the idle Shipping Board tonnage.

Following these practical talks, Edmund A. Walsh, S.J., Ph.D., of Georgetown University, made a very eloquent appeal for international cooperation in international commerce and closed the meeting as a good churchman should with the words "Let us pray long and hard that a beneficent Providence may send us some one with the vision and courage to cut the Gordian knot that binds with a mesh of technicalities those hundreds of idle ships of our merchant marine into one huge Sargossa Sea of rotting hulls. For if the commercial history of nations teaches us anything, is it not that no nation has remained a first-class economic power which failed to develop and foster a dependable merchant marine? Let the wealth of the Indies be ours; let our mines and fields and factories pour forth their products in profusion; let our financial institutions house the greatest gold reserve in the world; we are flying in the face of relentless economic laws if we do not provide an adequate fleet of carriers under the American flag."

Marine Engineers Honored

DURING recent months two prominent American engineers, whose work has been largely instrumental in developing marine engineering and the progress of navigation, have been signally honored by national societies.

Elmer Ambrose Sperry, president of the Sperry Gyroscope Company of Brooklyn, on April 30 last, was elected to the life membership in the National Academy of Sciences. Membership in the National Academy is limited to but one hundred and is conferred without prior knowledge of the recipient as a tribute for distinguished contributions to progress of the world's peoples in fields of science and art. Including Mr. Sperry's membership there are now seventeen engineers in the National Academy to represent all of the various branches of that profession.

Mr. Sperry has over 400 patents to his credit, among which are a long series of unique and startling developments running from the electric arc light to the gyro-compass and the gyro-stabilizer. He is best known for the Sperry gyro navigating compass, which has established itself as an instrument of precision in the world's sea fleets, and for the high intensity arc light, which has given to the world the greatest capacity in searchlight beams.

Francis Hodgkinson, chief engineer of the South Philadelphia Works of the Westinghouse Electric & Manufacturing Company, to whom more than any other one man is due the credit for the development of steam turbine design in America, was awarded the Elliott Cresson Gold Medal by the Franklin Institute in recognition of his scientific services.

Mr. Hodgkinson has been identified with development of steam turbines since 1885, when he joined C. A. Parsons and Company of England. In 1896 Mr. Hodgkinson took charge of the engineering and designing of the Parsons type turbines with the Westinghouse Machine Company, who had secured American rights for the manufacture of that type of turbine.

The first American commercial turbines driving alternating current generators were designed by Mr. Hodgkinson and installed by him in 1899, and are still in daily regular service. Under Mr. Hodgkinson's personal direction Westinghouse marine turbines have been designed and built for an aggregate of 2,740,000 shaft horsepower.

Our World Trade at a Glance

HOW is our world trade going? The question is answered in a paragraph by Chauncey D. Snow, manager of the Foreign Commerce Department of the Chamber of Commerce of the United States, in a foreword to the quarterly issue of "Our World Trade."

"Continued increase in exports," he says, "and a decrease in imports mark the year 1924. The monthly average for exports figured nearly \$383,000,000, and the monthly average for imports, nearly \$301,000,000. Automobiles continued their upward course and would have ranked second in the value list, though still at some distance from King Cotton, if wheat had not again emerged from the ranks and claimed second

position. Coal had to give way to the gasoline and naphtha group. America's labor-saving devices and modern equipment are going more and more to foreign countries. Our adding and calculating machines made a striking gain and our typewriters were bought in increasing numbers. Agricultural machinery exports established a new high record. Radio apparatus, now given a class by itself, exceeded last year's combined figure for telephone and telegraph and radio equipment.

"On the import side raw silk lost its preeminence at the head of the list to its persistent competitor—cane sugar. Crude rubber imports though less than a year ago in value, were credited with increased tonnage. The increases in silk and rubber and such tropical and sub-tropical commodities as coffee, coco and coconut oil are among the outstanding features of present day trade compared to the imports before the war."

Machinery Export Troubles

CERTAIN manufacturers of machinery in California have attained world-wide fame for the excellence of their products as applied to special conditions. Noteworthy among these is the Pelton Water Wheel Company, who have assumed the lead among America's builders of hydraulic turbines for the utilization of high head water power. This leadership has brought to the city of San Francisco millions of dollars worth of contracts during the past, and is in line to bring millions of dollars more in the future; for Pelton apparatus is always in the mind of any engineer who has to write specifications for hydro-electric plants to utilize the energy from mountain streams where high head is available.

In working on contracts for such machinery to be exported to certain localities, the problem of freights and deliveries is a very serious one. This is illustrated very aptly in the case of a contract just obtained by the Pelton Water Wheel Company of San Francisco for construction of two units of 40,000 horsepower each for the Sao Paulo Tramway, Lighting and Power Company of Sao Paulo, Brazil. In order to obtain this contract it was necessary to guarantee specified delivery of the machinery, and on inquiry it developed that the only direct line of steamers from San Francisco made stops at Santos only on the return trip from Buenos Aires and Rio, and that to stop on the outbound trip would not be considered unless the shipper agreed to a high guarantee of compensation and dispatch. This guarantee, while probably well within reason from the standpoint of the steamship company, was absolutely impossible from the standpoint of the manufacturer. It therefore became necessary to resort to intercoastal shipment by water, with transshipment at New York by a British line direct to Santos. Only the superior excellence of the product manufactured by the San Francisco firm induced the power company to assume a part of the freight and so secured this quarter of a million-dollar contract for the San Francisco manufacturer.

This incident illustrates very graphically the necessity for adequate commercial transportation connection with foreign trade markets. If we can built ma-

chinery at a satisfactory price and better than it can be built anywhere else in the world, that fact is of no advantage to us unless we can also guarantee good deliveries. It seems to us that a proper degree of co-operation between local commercial bodies, steamship operators, and manufacturers could entirely eliminate the necessity for such a situation.

In the particular case cited, there are, of course, at the present time, many factors involved, some chronic and some acute. In all the ports of Brazil, at the present time, and particularly Santos, there is the greatest congestion, and, according to the reports coming out from the Department of Commerce at Washington, dispatch has gotten to be a joke; in fact, the department states that from two to three months lay-up of the ship at this port to get dispatch of the cargo is the present rule. This condition is due to labor troubles and to the late revolution in Brazil.

Another factor contributing to the problem is the luxury tariff against preserved fruits, which prevents California products from active competition in South American countries. Were this tariff lifted, there might be reasonable outbound cargoes from San Francisco for a steamer line to the East Coast of South American ports.

But even taking all of these things into consideration, the city of San Francisco ought to provide more direct transportation to more of the world's great sea ports, so that her builders of machinery can have a more even chance to compete in the world's markets.

Equipment and Insurance

MARINE insurance underwriters have always been keenly interested in the equipment of vessels and have long recognized that the safety of the ship and of her contents often depends very largely on the character, the condition, and the use of that equipment. This is reflected in classification of ships and in the differences in premium rates between various fleets, as experience has shown up in the loss ratios.

Certain equipment is required by law, certain other equipment that would seem just as necessary on some classes of ships is not so required. The underwriters could materially help the shipowner by making allowance in the premium rate for such equipment.

One class of equipment which should certainly receive such recognition from the underwriters is the radio compass. Now that the United States government has seen the light and is installing radio beacon stations to cover all her coast lines, the value of the radio compass as an adjunct to safe navigation is established on a firm foundation.

The experience of intercoastal and coastwise navigators with this equipment covers practically every emergency possible at sea. Without exception, masters of vessels so equipped are thoroughly convinced that it has overcome the fog terror.

Why would it not be good business for the marine insurance underwriters to encourage "Safety First" at sea in the same way that fire insurance, automobile insurance, life, health, and accident insurance underwriters are doing ashore?



EDWARD T. FORD,
President, Panama Mail Steamship Company.



Panama Mail Steamship Colombia

PANAMA MAIL STEAMSHIP COMPANY

A New Name for a Pioneer Pacific Coast Steamship Line Continuing in Operation Under the Same Personnel and with the Same Connections that Have Built Up for this Marine Common Carrier a Large and Growing Good Will

ON the celebration of California's Diamond Jubilee, we will all be indulging in retrospection, introspection, and prospect. Looking backward, we will count again the milestones of our progress. Looking inward we, we will take stock of our resources and our capacity. Looking forward, we will forecast the measure of our future in its possibilities for growth and achievement and will gird ourselves to greater endeavor, to loftier vision.

Seventy-seven years back, just before the great gold discovery in California, a group of very courageous business men in New York formed a corporation for operating a line of steamers between the Isthmus of Panama and the Columbia River. The first steamer was ready just as the great gold rush commenced, and the northern terminus of the line was changed to San Francisco. This line of steamers became known as the Panama Line.

In those early days the sea lanes were the principal means of communication between the pioneer California community and the older cities of the world. San Francisco Bay was full of ships of all nations, tall stately ships which made history and left their indelible mark on sea tradition and marine literature. But the day of days on the old San Francisco waterfront was steamer day, when the mail came in on the Panama Line steamers and the full passenger lists of those early "palatial floating hotels" reunited families and helped to swell the fast growing population of the infant metropolis.

Throughout its seventy-seven years, the Panama Line has held its identity. Shippers have consigned via Panama Line, passengers have booked via Panama Line. Today the Panama Line is assuming an entirely separate corporate entity and the name Panama Mail Steamship Company. In making this change the Panama Line wishes to emphasize that there is practic-

ally no change except that of name. The managing personnel is practically the same. The Central American connections remain unchanged, as do those on the East Coast and at Havana. The ships are the same and dock at the same piers in the same ports. The officers on these ships are unchanged. Identical initials, more straightforwardly arranged, adorn a more strikingly beautiful design of house flag. In short, here we have the ideal reorganization, by which through retrospection and introspection this corporation is able without revolution to insure the brightest prospect for its patrons, its employes, and itself.

The Ships

The Panama Mail Steamship Company is operating three steamers in the intercoastal service; two motorships and two steamers in the Pacific Coast-Central American service. This company is unique among Pacific Ocean passenger service operators in that 80 per cent of the vessels operated are less than ten years old and all of them were designed and constructed from the keel up with special reference to comfort in the tropics.

The three steamers, Colombia, Venezuela, and Ecuador, were built in Holland to the very highest rating for hull and equipment and outfitted with all the best devices to insure safety, comfort, convenience, and health for the passenger. Comfortable, homey, elegant staterooms provide accommodations for 111 first cabin passengers. These rooms are each arranged with two beds, two wash stands with running water, a plate mirror over each wash stand, a large full length mirror, large clothes closet, plenty of drawer space, ceiling electric fixture, reading lights over each bed, electric fans, steam radiators, and a large outside window with ample provision for perfect ventilation. All staterooms are located above the main



The social hall and music room.



Partial view of promenade deck.



One section of writing room.



The attractive dining saloon, featuring Linotile flooring.

Views Aboard
Panama Mail
Steamers

Colombia
Ecuador
Venezuela

deck. Thirty rooms, with accommodations for 59 passengers, are on the port side of the main deck, and 24 rooms on the upper deck.

Forward on the upper deck is located the spacious dining saloon, which, as will be seen from the illustration herewith, is arranged for small tables to seat four, six, and eight persons at a table. This room, finished in white enamel with mahogany trim and with tasteful Linotile flooring, is lighted by large windows on three sides and is located practically amidships, giving assurance of minimum disturbance at sea. The full capacity list of first cabin passengers can be comfortably accommodated at one seating.

The promenade, with its beautifully laid teak deck, is spacious and comfortable, completely open at the sides, completely shaded by the boat deck above. In the superstructure on this deck are located the social hall, the writing rooms, the smoking room, and veranda cafe, as well as two large and finely appointed cabins-de-luxe. These latter consist of a large room with two separately curtained bedsteads, a large clothes closet, lavish furniture, and with two outside windows. This room is finished in silk brocade with mahogany trim and connects directly with a large tile bath room fitted with the most modern and up-to-date sanitary bath fittings.

Insurance of well conditioned fresh viands is provided by the installation of a No. 7 Hall's carbon-dioxide refrigeration machine, giving a capacity of 400 pounds of ice per day, as well as furnishing refrigeration for ice boxes in the pantries and the meat room and to a cold room and freezing room located 'tween decks with a cubic capacity of 4300 feet.

Eight lifeboats and one motor lifeboat are handled by Welin quadrant davits from the boat deck, and in addition a large capacity in life rafts is provided. The hulls of these vessels are subdivided into seven compartments by six water-tight bulkheads reaching to the upper deck; and the double bottoms are further subdivided by the water-tight keel. The double bottoms are continuous right through from the forepeak to afterpeak. Two deep tanks in four compartments just forward of the engine room give 1025 tons of fuel



De Luxe cabin on Panama Mail steamship Colombia.

oil capacity, and a reserve of fuel oil is provided by the forepeak tank and the double bottoms forward of the engine room. With all tanks full, the supply will last about thirty-five days at full speed.

Fresh water capacity of 570 tons is provided in the wing bunker tanks and in the double bottoms aft of the forward engine room bulkhead.

The Colombia, Ecuador, and Venezuela are very comfortable sea boats with conservative triple expansion, Scotch marine boiler, steam propulsion machinery, and one large high pitch propeller operating at 90 revolutions a minute—a combination hard to beat for reliable, steady, schedule time on ocean voyages.

The motorships City of San Francisco and City of Panama are the newest seagoing motorships on the Pacific Coast and are familiar to readers of Pacific Marine Review through complete description and plans published in the issue of November, 1924. These motorships are modern in every particular.

The Routes

The three steamers maintain sailings every twenty-one days from San Francisco to New York via Panama Canal, touching en route at Los Angeles, Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York.

The two motorships maintain passenger and freight service between San Francisco and Panama, with ports of call on the west coast of Mexico and Central America.

Personnel

In the newly organized Panama Mail Steamship Company, Edward T. Ford is president. A San Franciscan, he represents all the best traditions and the virile energy of Pacific Coast steamship men. Daulton Mann is general manager, with C. C. Mallory as assistant general manager and treasurer. W. A. Young, Jr., is general passenger agent, and G. E. Buck is general freight agent. It will thus be seen that the active management of the old Panama Line

(Continued on Page 360)



The Panama Mail motorship City of San Francisco.

AMERICAN INTERNATIONAL TRADE

Statement of conclusions of the National Foreign Trade Convention held at Seattle, June 24-25-26, concerning economic conditions, ocean transportation, foreign credit, international communication, tax revision and commercial aviation

THE international commerce of the United States has grown from forty-eight to ninety-three million tons in the last decade. That development furnishes a graphic picture of the progress made by the American people during those ten years in all that pertains to the conduct and expansion of their foreign trade. It demonstrates the constantly widening acceptance of the fundamental relationship between maintained foreign trade and domestic prosperity; this steady improvement in procedure and technique, and the solid expansion of American facilities for overseas trade.

Economic conditions are fundamentally sound in the United States and are improving in other parts of the world, especially in Europe. Production is increasing, in different degrees in different countries, but on the whole in a way that necessarily carries with it increase in consumption. The general trend is upward.

This progress and this situation supply incentive for further energy and effort. It is important to stimulate the development of American facilities for foreign trade, especially in the factors of transportation, communication, and finance.

The Twelfth National Foreign Trade Convention meeting in Seattle on the Pacific Coast reaffirms the definite conclusions reached by the Eleventh National Foreign Trade Convention, held in Boston on the Atlantic Coast, on the subject of American facilities for ocean transportation, substantially as follows:

The development and maintenance of a merchant marine under the American flag, privately owned and operated, is essential to both our commerce and our national defense. The chief agency for the accomplishment of this purpose is the support of American ships by American importers and exporters.

The practice of the United States Shipping Board and the uneconomic competition of the government-owned fleet make it impossible for private capital to purchase steamers and compete with government-owned tonnage in foreign trades. Government-owned ships should be under single control rather than under divided authority. Until existing lines of passenger and mail steamers, and also freight steamers operating on so-called essential trade routes, can be sold to private operators, under contracts permitting of their successful operation and development free from government competition, government operators on commission should share in the loss or profit of the operations on a basis which would entail responsibility for results comparable to that of private owners whose investment are jeopardized under present conditions.

Not only has there been, in recent years, a gratifying increase in the value and volume of our foreign trade; there has been also a corresponding increase in the number of foreign traders in the United States. It is of prime importance to them and to the international commerce of the nation generally that adequate facilities for financing their overseas transac-

tions should be furnished for all markets by American financial institutions. An encouraging improvement in this direction has been accomplished. There is need for still further advance and for closer cooperation between bankers and traders.

In the flotation in this market of foreign loans, either to governmental or private borrowers, our investment bankers have opportunity to be of substantial service to American foreign trade. The present situation calls for the exercise of constant care and prudence, lest American capital be devoted to uses detrimental rather than helpful to American enterprise. Foreign loans should be arranged with due regard to promoting industry in this country and furnishing occupation for our people. It is of the utmost importance that our investment bankers, when negotiating foreign loans, should always have regard to the furtherance of American trade and they should, as far as practicable, provide for the expenditure of the proceeds in this country. In such cordial and close cooperation with American industry lies the greatest possibility for lasting service to all our people.

Communication is no less essential to the maintenance and expansion of foreign trade than finance. Prompt and efficient service by cable and wireless through American systems is requisite to the full measure of success of our foreign trade. Such communication also renders a world, as well as a national service, through prompt and full transmission of news dispatches, promoting international understanding and aiding to prevent misinformation. It is of particular importance to the maintenance of friendly relations with other nations that American systems of communication should be maintained with full and prompt service. The position taken by our government on this question is encouraging, and merits the support of our people.

FOREIGN TRADE OF THE UNITED STATES

Merchandise imported and exported, and the annual excess of imports or exports 1890 to 1931

Year ended -	Exports			Imports			Total exports and imports	Excess of exports over imports	Percent of exports to imports
	Dominion	Foreign	Total	Free	Dominion	Total			
June 30	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
1890	845,294	12,535	857,829	205,609	523,642	769,311	33.7	1,417,143	68.514
1891	872,279	12,211	884,490	360,241	478,678	843,168	33.4	1,729,297	29.665
1892	1,018,752	18,516	1,037,268	458,048	569,463	1,037,412	33.4	1,827,681	202.875
1893	831,031	16,634	847,665	444,544	423,437	866,981	31.2	1,714,646	217.169
1894	869,205	22,046	891,251	376,796	275,190	651,986	36.0	1,543,237	76.568
1895	781,393	14,145	795,538	365,214	368,736	734,050	49.6	1,529,588	102.482
1896	862,200	19,408	881,608	369,757	409,967	779,724	47.4	1,662,332	294.264
1897	8,032,036	18,966	8,050,998	343,828	382,792	764,620	49.9	1,815,618	544.542
1898	1,210,292	21,189	1,231,481	291,114	324,635	615,749	47.3	1,847,231	615.613
1899	1,203,931	23,092	1,227,023	380,240	398,860	697,100	43.1	1,924,123	529.874
1900	1,370,764	23,719	1,394,483	397,237	482,204	879,441	43.2	2,244,424	544.542
1901	1,490,463	27,302	1,517,765	339,669	483,563	823,172	41.3	2,340,937	664.593
1902	1,355,482	26,231	1,381,713	396,819	369,802	766,621	43.9	2,148,334	478.298
1903	1,362,231	27,911	1,390,142	426,191	599,338	1,025,529	41.8	2,415,671	394.623
1904	1,434,179	25,648	1,459,827	454,139	536,937	991,076	42.8	2,451,904	469.740
1905	1,491,745	26,817	1,518,562	817,442	690,071	1,517,513	46.2	2,636,075	601.049
1906	1,717,954	28,911	1,746,865	549,824	676,838	1,225,662	44.9	2,870,427	817.303
1907	1,832,718	27,133	1,859,851	644,039	790,391	1,434,430	44.2	3,294,281	1,048.430
1908	1,834,766	28,997	1,863,763	825,603	668,739	1,494,342	41.0	3,358,105	1,068.431
1909	1,838,256	24,635	1,862,891	699,557	712,363	1,411,920	43.7	3,274,811	1,031.091
1910	1,710,084	34,801	1,744,885	753,311	801,636	1,554,947	44.4	3,300,832	1,048.038
1911	2,012,849	35,771	2,048,620	776,873	750,253	1,527,126	50.1	3,575,746	1,222.084
1912	2,102,221	31,082	2,133,303	881,871	771,084	1,652,955	53.3	3,805,258	1,357.087
1913	2,328,806	37,378	2,366,184	997,324	825,454	1,822,778	54.8	4,188,962	1,572.876
1914	2,329,684	34,465	2,364,149	1,127,503	766,423	1,893,926	59.8	4,258,075	1,670.852
1915	2,716,178	32,411	2,748,589	1,033,571	640,643	1,674,214	61.7	4,422,803	1,994.410
1916	4,772,174	61,205	4,833,379	1,492,447	703,236	2,195,683	67.9	6,831,294	2,115.090
1917	6,277,184	62,836	6,340,020	1,848,843	810,814	2,659,657	68.8	9,000,000	2,632.893
1918	8,826,862	81,669	8,908,531	2,118,897	827,056	2,945,953	71.9	9,854,484	2,975.050
Dec 31	3,122,334	53,327	3,175,661	1,148,558	2,036,666	1,484,399	77.7	4,660,070	1,689.632
1919	7,749,146	170,010	7,919,156	2,699,703	2,215,662	2,994,365	69.1	11,214,791	4,018.061
1920	8,090,481	147,835	8,238,316	2,117,011	2,191,471	8,278,481	68.0	12,416,797	2,949.838
1921	4,270,928	106,103	4,377,031	1,562,292	2,814,739	617,299	62.2	5,991,270	1,975.962
1922	2,765,091	66,650	2,831,741	1,871,017	1,240,830	3,112,747	60.1	6,944,474	2,115.030
1923	4,090,719	76,778	4,167,497	2,135,942	1,656,124	2,792,066	56.3	7,959,563	3,737.477
June 30	2,009,690	49,967	2,059,657	1,077,118	872,307	1,649,664	66.4	2,939,366	2,115.030

International as well as domestic business is suffering from excessive taxation. Unscientific and unsound taxation, such as that enforced by present law, imposes a heavy burden upon all our people, far more, proportionately, through increased cost of living upon those whose incomes do not reach directly taxable figures than upon those of large incomes. No person who lives in the United States escapes this burden. Effective and sound tax revision downward at the forthcoming session of Congress is necessary if enterprise is to be encouraged and business to expand.

Tax revision should include relief of American citizens resident abroad from tax upon income derived from the conduct of business in the country of residence. The United States is the only great trading nation which maintains this unjustifiable policy of taxation. This tax lays an indefensible handicap upon our foreign trade and needlessly increases the difficulty of inducing competent Americans to take up residence abroad to represent American concerns engaged in international commerce.

Despite the great value of the American market to other countries and the equal treatment free from discrimination which they enjoy here, discriminations are multiplied in certain markets against American products. The entry enjoyed here by other countries should be so regulated as to deal effectively and permanently with this injustice.

The Cuban market, developed through American investment and the reciprocal agreement of twenty-two years ago, is now menaced through changed conditions of foreign competition. This situation calls for prompt action by Congress toward further reciprocal legislation. For example, one form of relief should be the repeal of the antiquated law regarding the importation of tobacco products which prevents the negotiation with Cuba of a permanent parcels post convention. Cuba has a parcels post trade with Europe of more than thirty million dollars a year. American manufacturers are effectively barred from that market through the operation of this statute.

Normal development of international commerce depends upon normal flow of credit, which is hampered while currencies remain unstable. The most definite step taken toward stabilization of exchange has been the restoration of the gold standard in Great Britain, facilitated by American cooperation. This tends to encourage the stabilization of other currencies and the constructive action is commendable.

Superfluous laws and complicated regulations repress foreign trade as well as domestic business. The administration of the customs draw-back law, for instance, remains complicated and dilatory, a hindrance rather than a help to the re-export trade, one of the most valuable forms of commerce. No substantial progress has been made toward the creation of foreign trade zones despite the manifest advantages of American ports for this class of business, and despite the insistent demand of American business for such facilities.

Although the United States is the largest buying and selling market in the world, it imposes restrictions upon the entry of foreign business men whose visits here would be highly advantageous but who are discouraged by the red tape surrounding entry under

FOREIGN TRADE OF THE UNITED STATES

Imports and exports by grand divisions and great groups during the calendar years 1914, 1920 to 1923, and the year ending June 30, 1924

Items	Calendar years				
	1914	1920	1921	1922	1923
GRAND DIVISIONS					
Europe	1,700,000,000	1,600,000,000	1,600,000,000	1,600,000,000	1,600,000,000
Imports	753,538	1,227,843	761,912	991,293	1,157,155
Exports	1,339,296	4,166,194	2,363,899	2,083,557	2,093,117
North America					
Imports	11,101	1,662,603	751,819	822,454	1,101,518
Exports	181,588	1,929,163	1,129,579	915,654	1,086,167
South America					
Imports	229,520	760,899	295,623	358,763	467,121
Exports	91,013	623,917	273,325	256,675	269,318
Asia					
Imports	266,861	1,283,725	365,790	826,886	1,019,811
Exports	99,193	771,748	486,099	448,950	511,498
Oceania					
Imports	18,312	192,966	87,601	18,517	59,291
Exports	72,210	271,435	139,284	101,945	146,423
Africa					
Imports	19,661	150,285	46,373	61,924	87,660
Exports	22,324	185,692	72,846	55,776	69,671
Total					
Imports	1,769,276	5,278,481	2,509,148	3,112,747	3,792,966
Exports	2,113,624	8,228,016	4,485,611	3,811,777	4,819,635
GREAT GROUPS					
Crude materials for use in manufacturing					
Imports	597,921	1,751,940	838,217	1,161,075	1,358,511
Exports	406,497	1,870,767	975,706	981,355	1,292,044
Foodstuffs in crude condition and food animals					
Imports	231,725	577,627	306,181	329,899	302,891
Exports	275,276	947,091	673,334	458,611	275,178
Fabric (in part or wholly prepared)					
Imports	258,483	1,238,179	365,311	387,419	529,362
Exports	308,852	1,116,605	685,025	587,988	582,292
Manufactures for further use in manufacturing					
Imports	275,585	802,456	367,890	592,677	719,712
Exports	344,984	958,497	410,167	437,730	593,718
Manufactures ready for consumption					
Imports	407,048	876,725	612,896	662,947	727,540
Exports	628,910	3,204,858	1,620,849	1,292,307	477,759
Miscellaneous					
Imports	17,514	31,594	20,643	18,820	20,807
Exports	22,639	11,763	7,847	7,101	6,421

present conditions, with the result that large numbers of buyers who would otherwise come here divert their purchases to other countries.

Americans traveling abroad are still charged excessive passport fees by their own government and must meet high visa fees imposed by foreign governments in retaliation. These fees constitute an unnecessary nuisance tax upon American business men already subjected to excessive federal, state, and local taxation.

The assurance of the State Department of its settled policy of support of legitimate American enterprise abroad is gratifying. That declaration encourages the hope that effective steps may soon be taken to obtain release from some of the hindrances to which attention has been called.

The Sixth National Foreign Trade Convention, held in Chicago in 1919, stressed the advantages of commercial aviation. Since then, many other nations have made substantial progress in that line. The United States, which has developed a most efficient air-mail service, is still regrettably backward in commercial use of the airplane and the dirigible. This agency of improved communication is worthy of greatly extended employment. It should be organized under responsible supervision and control through the creation of civil aeronautics under the Department of Commerce.

Believing that adoption and development of international accepted standards are essential in all branches of foreign trade, we commend the efforts of the Department of Commerce to this end and urge that the work be continued until uniform specifications on all basic commodities and the products thereof have been determined that will thereafter govern the inspection and certification of exports between the seller and the buyer.

There are many reasons for confidence in the future of American foreign trade. World production is increasing, which means more buying power and more trade. International trade grows as the world grows, and we may reasonably count upon our share.

PROBLEMS OF THE AMERICAN MERCHANT MARINE

By LEIGH C. PALMER, President, Emergency Fleet Corporation

SINCE about three-fourths of the American tonnage engaged in overseas trade is government-owned, it seems obvious that the future of this part of the merchant marine will depend largely upon how the Emergency Fleet Corporation handles its affairs and whether or not it is able to bring its lines near enough to a sound business basis to make them appeal to the private investor.

The progress made by the Fleet Corporation is perhaps best exemplified by the reduction in losses of its fleet of cargo vessels during the past year. The passenger lines and tankers are left out of consideration for the moment.

Reduction in Losses

A little more than a year ago we were operating about 320 cargo vessels at a loss of more than \$25,000 per voyage. During the first ten months of the present fiscal year, beginning July, 1924, the average loss was reduced to about \$20,000, and at the end of this period it had fallen below \$17,000. This improvement is attributable almost entirely to improved administration and increased efficiency of operation. While the total number of vessels in the cargo fleet was reduced by these consolidations to about 300, the improvement in the handling of the vessels, reflected in their quicker turnaround, enabled us to make practically the same number of voyages as before, with a substantial increase of cargo and revenue, and a reduction of operating expense. At the same time we gradually reduced our overhead and in the elimination of unnecessary personnel alone effected savings at the rate of about \$1,500,000 a year.

We regard the improvement already made as merely a beginning. After a careful analysis of all the factors in the case, we feel that the loss per voyage of the government-owned cargo fleet can be reduced to about \$8500, even if the present unsatisfactory trade conditions continue, but a rise in freight rates or any other favoring conditions would, of course, change that figure for the better. If and when this result is reached, the total operating loss of the cargo fleet may be expected to be only about \$10,000,000 a year. This, however, does not include interest and depreciation charges, which must be included if proper comparison is to be made with private operating results, and these two items would increase the prospective voyage loss to about \$13,500.

Replacements

There is, however, the question of replacements that has to be considered in any plan of continued government operation. If it should prove impracticable to transfer the government-owned fleet to private ownership, as contemplated by the Merchant Marine Act, and if the government should have to continue indefinitely the maintenance of service on the essential trade routes, the necessity of replacing gradually the present fleet with new and improved vessels must be faced.

The life of our vessels may be assumed to be twenty years; ours are now about six years old. Replacements should be made gradually, since it is unwise to allow a fleet as a whole to deteriorate to the point of obsolescence and inefficiency and then have to completely rebuild it. Owing to the gradual improvement in types of vessels, their machinery and equipment,

the fleet can be kept up-to-date only through continuous replacement of the oldest and least efficient ships with new ones.

Cost of Replacement

What would a replacement program cost the government? Taking an active fleet of 300 cargo vessels as a basis of our consideration, and assuming that a few of the lines comprising, say, fifty vessels, will be disposed of to private interests, there would remain about 250 vessels to be replaced, in due time, by the government. We have a conversion program under way by which about fifty steamers of the laid-up fleet will be reconditioned, within the next three or four years, with diesel motors, electric auxiliaries and modernized equipment throughout. These motorships will be substantially new vessels, and the conversion program may, therefore, be regarded practically as a partial replacement program; thus the number of steamers to be replaced would be reduced to 200 and the average replacements would be about twenty vessels per year when the replacement program is fully under way.

In a fleet of 250 vessels distributed over the various trade routes of the world, there would be a considerable variation of types. They would range from the ordinary, comparatively slow cargo vessel of around 8000 tons to the faster, superior equipped cargo liner 10,000 to 15,000 tons. Most, if not all, of them would be motorships, and a considerable number probably would be provided with limited passenger accommodations. Their cost probably would range from around \$800,000 to, say, \$1,500,000, or an average cost of about \$1,000,000 each. Therefore, if our replacement program calls for twenty vessels a year, the cost would average about \$20,000,000 per year for new construction for the cargo fleet alone.

As for the passenger liners and combination passenger and cargo vessels, of which we are operating a total of fifteen, the replacement cost would range from \$5,000,000 to \$15,000,000 per vessel, and would average probably \$10,000,000 a year.

Thus, unless the government can find a way to transfer its fleet to private ownership, as contemplated by the Merchant Marine Act, we face the definite prospect of having to spend about \$30,000,000 a year continuously for replacements alone. With the improved administration and higher efficiency toward which we are working, the operating loss of this fleet may be reached to about \$10,000,000. Therefore, the prospective cost of continued government maintenance of a fleet of about the present size is about \$40,000,000 per year.

Operating Differentials

Our study of twelve hundred voyages to all parts of the world in a twelve month period indicates that if, under the best practicable operating conditions the Fleet Corporation losses (including interest and depreciation) were \$13,500 per voyage, the average private American owner of this tonnage could reduce that loss to about \$4500. Further, the same fleet on similar services, if operated under British conditions, would about break even. In other words, the differential between the operating results of government-owned and privately-owned vessels is estimated to be

about \$9000 per voyage; while the differential between operating results of private American and British vessels, operated with equal efficiency, is believed to be about \$4500. In exceptional cases, exclusive financial and industrial connections here and abroad may change this amount considerably.

Government Aid

This last figure, \$4500, may be taken as an approximate measure of the amount of government aid that would be required to place American vessels on a competitive footing with British vessels. For a cargo fleet of the size of that operated by the Fleet Corporation, about 2,500,000 deadweight tons, this aid would amount to about \$5,000,000 a year, and extending this to include all American cargo vessels in foreign trade, the total might amount to \$7,500,000. This, as stated before, does not include passenger services, each of which constitutes a more or less special problem so far as government encouragement or aid is concerned. Passenger and mail lines are usually aided by means of mail subventions, or subsidized on the basis of naval defense requirements, and the amount of such subventional aid cannot be estimated in advance of the determination of the national policy regarding such lines, but probably it would be somewhere between \$5,000,000 and \$10,000,000 a year, or, say, \$7,500,000. Thus it would appear that the total amount of government aid necessary to put the American merchant marine in foreign trade on a competitive footing would be about \$15,000,000 a year.

Triple Alternative

To summarize, our country faces three alternatives in respect to the merchant marine in foreign trade: first, continued government operation, costing ultimately around \$40,000,000 a year; second, government aid to private shipping, amounting to about \$15,000,000 a year; or third, the gradual but certain disappearance of our flag from the international trade routes, and a return to our pre-war condition, when less than 10 per cent of our foreign commerce was carried in American vessels.

Advantages Private Owner

A private owner has numerous advantages over a government operator of shipping, not only in his ability to keep his expenses low, but also in getting more cargo and revenue.

A private owner has a comparatively free hand in the arrangement of his services; he can avoid unprofitable ports; he can cooperate with his competitors in arrangement of sailings to their mutual advantage; he can make exclusive traffic arrangements with other transportation systems; he can affiliate with other interests; and he can do many other things that a government operator cannot do to promote his business.

Disadvantages Government Operator

The government operator must arrange his services to avoid competition with private American lines; he must sometimes serve regions and ports which do not furnish adequate business; he must, on occasion, carry cargo which is not remunerative; and he cannot, of course, form exclusive business connections.

Then there is another very important distinction to be made between private and government owned lines. The private organization, from its president down through the ranks, is imbued with the spirit to make its enterprise profitable to the stockholders. Every official and every employe knows that his job depends upon his doing his part to produce dividends. He knows, too, that success will bring its reward in pro-

motion and security of position. On the other hand, the personnel of a government-owned line cannot help but feel that the National Treasury is behind it, which feeling is not conducive to rigid economy and the highest efficiency; and the employes lack the definite prospect of reward for service and the security of position which appeal so strongly to men of ambition and ability.

These conditions among others produce in effect an intangible differential of very considerable proportions against government-owned lines, which cannot be abolished, although it can be minimized, as we of the Fleet Corporation are endeavoring to show.

The differential of about \$4500 between the operating costs of private American and British vessels may be largely offset by the extremely favorable terms on which the American operators can purchase vessels today; but in the long run, it is not going to help the situation to sell our lines at nominal prices in consideration of a guaranteed operation for a period of, say, five years, unless government aid shall be forthcoming before the end of such period. In fact, a sale of ships for private operation on a foreign trade route is possible today only if the price be reduced enough to offset the prospective operating losses during the period agreed upon. There is an immediate advantage to the government in such a sale because it saves the excessive loss of government operation during that period. The purchaser stands a good chance of coming out even, or better, at the end of the period, but, unless in the meantime a policy of government aid shall have been adopted, or unless some radical and wholly unlooked for change in competitive conditions is brought about, the prospect for his continuance on the route is remote. The result will be that either the route will be abandoned or the government will have to resume operations. I do not want to be understood as discouraging the prospective purchasers of our lines; on the contrary, I think we should encourage such sales for the reason that the private operator can be depended upon to make a much better showing on the routes than the government can, and I do not think he stands to lose; but I do want to emphasize the necessity of adopting an adequate and workable scheme of government aid without much further delay.

Some of the figures I have used are tentative and doubtless will be somewhat modified by further experience or by changing conditions; but the salient facts of our problem are believed to be plainly indicated. On the basis of such facts we should formulate a program, if only with a view to constructive criticism and ultimate reconciliation of conflicting views. Certainly, all concerned would welcome a clearing up of our shipping problems and, above all, an early definition of the government's future policy so that we all may know what our mission is and how to proceed.

Proposed Program

The program, so far as the government-owned fleet is concerned, should, I believe, include the following:

(a) An aggressive and well thought-out plan to transfer the government fleet to private ownership on terms that protect the government interests and at the same time give the buyer an opportunity for profit that will insure him a continuance indefinitely in the trade.

(b) Continuance of the operation of government lines on such of the trade routes as are considered economically essential to the national interest and which cannot be disposed of to private operators.

(c) Continued improvement of these lines until they show the best economic results obtainable under government operating conditions, thereby reducing the present operating loss by half.

(d) On the most heavily losing routes, the maintenance of only such service as may suffice to hold a position in the trade and to conserve our national trade interests; but, on the more promising routes, an expansion of the services to meet the demands and prospects of the national trade.

(e) Where sales are impossible, the charter of the lines to private responsible operators, if practicable,

on terms that will be advantageous to the government and that will give the operator an opportunity to become eventually an owner.

I will not now suggest the form the aid that should be given the privately-owned merchant marine. This is a problem that must receive the earnest attention of the entire business community and of Congress, and in formulating a program for the merchant marine it seems to me that no body of business men is more capable to furnish constructive suggestions than those now present in this convention.

THE OUTLOOK ACROSS THE PACIFIC

By PROF. H. T. LEWIS

Business Administration College, University of Washington.



SEATTLE'S Commercial Commission to the Orient, sponsored by the Seattle Chamber of Commerce, went on its mission for certain very definite purposes. In the first place, it carried a personal invitation through its chairman to the business men and commercial organizations on the other side of the Pacific to attend the National Foreign Trade Convention held in Seattle on

June 24, 25 and 26. This convention was among the most important held in the United States and was unique in two particulars: first, of the twelve conventions ever held, it is only the second to be held on the Pacific Coast; second, it was the first to which representatives of other countries were specifically invited. In addition to carrying this invitation, the commission went to the Orient for the sake of establishing contacts which might eventually prove advantageous in a business way. It also went for the purpose of conveying a message of goodwill. It did not go for the purpose of making an exhaustive survey of economic and industrial conditions.

Impressions of Orient

Members of the commission naturally returned to the United States with various impressions, these impressions being more or less in line with their personal interests, whatever they may have been. But regardless of any other impression which they may have received, this much was felt by all: namely, that the Orient, from Harbin to Manila and from Yokohama to Peking and westward, is in a state of unrest such as it has never experienced before. This unrest is expressed in many different ways. Men who have lived in the Orient for many years are free to admit that the character of the Chinese, for instance, is undergoing a considerable change. There are many evidences of a deep feeling of resentment against the foreigner. These evidences are not always open and manifest, and foreigners are not ill-treated, but the growing feeling on such matters as extra-territoriality, to mention only one consideration, is increasingly manifest when one gets under the surface. The Chinese press, for instance, seizes upon every opportunity to arouse public opinion against the actions of foreigners.

Unrest

In Japan the conditions of unrest modified by local conditions are to be found. Among certain classes

there is still much resentment against the immigration law, but the bitter debate over the reformation of the House of Peers and the tremendous interest manifested in the fight, ultimately successful, to enfranchise some ten million additional Japanese, are indications of a new spirit. The continued and occasionally caustic and even bitter criticism of governmental policies would scarcely have impressed the visitor ten or fifteen years ago. So in the Philippines, the question of independence is constantly being presented to every visitor who comes.

China

This condition prevailing throughout the Orient naturally has its effect on business conditions. It is very easy to over emphasize disturbances of a military character in China, for military disturbances have been found in China for many years. But with the millions of men under arms and with the lack of an effective central government, these conditions are certainly not conducive to business stability. Floods last year ruined the homes of some thirty million people. The president of the board of trustees of the Hong-kong-Shanghai Bank in reviewing 1924 says: "The year under review has been more difficult than its predecessor." Even old established firms in Hong-kong have met with serious financial reverses. A good deal of business is being done, there is even some expansion of business, but the condition is not one over which to become unduly enthusiastic.

The railways in China still suffer from the incubus of interference. The trade of Tientsen was paralyzed by the suspension of goods traffic, and great inconvenience and commercial loss resulted from stoppage of coal deliveries in mid winter. In March of this year "the resumption of business activity in North China was prevented by fighting, and traffic on the Peking-Hankow Railroad was practically suspended." The net salt revenue declined \$9,000,000 (Mex.) due to the retaining of much of this money by military governors. It is also true that 1924 was a year of rather more pronounced production in silver than its predecessor. The disturbances of May and June in the Canton district, combined with the general strike in Shanghai and elsewhere, may prove to be even more disturbing in the current year than were similar activities last year.

Japan

In Japan bank failures during the past six months have been very heavy and there have been also some serious industrial failures. It may be that these are due partly to poor management, they may be due to unsettled world conditions, but there seems to be a

feeling that they are also due in part to the refusal of the Japanese to deflate. The government has made a determined effort to enforce the ban on borrowing from abroad. The total loans abroad are now 100,000,000 yen. In the face of this most difficult financial situation the recent Diet granted a subsidy of 1,000,000 yen a year for the next six years to dye industries; it made a loan of 9,000,000 yen to the Han Yeh Ping Iron Works; it also granted a subsidy of 600,000 yen to a cooperative cocoon and drying establishment. It is also noteworthy that attempts to secure licensed public accountants failed in the Diet.

It is undoubtedly true that Japan will work out a solution to these financial difficulties. High cost of living, unemployment, and disturbing financial conditions render her problems serious.

The Philippines

Of the three countries, Japan, China, and the Philippines, it would appear that the Philippines are today in the best condition. Lumber exports last year were the largest on record, two million board feet going to the United States alone. China and Australia are the only two importers of lumber who did not measure up to former years. The hemp industry found 1924 an excellent year. Credit was easier; a reduction of freight rates helped the movement of hemp;

trade revival of the United States, combined with improved economic conditions of Europe, assisted in increasing the sales. The combined value of all the coconut products was very much larger in 1924 than in 1923. The sugar market was not as satisfactory, the price being decidedly lower than in 1923. It is likely that the 1925 crop will be exceptionally large, but there will also be large crops in other countries. The tobacco market was in the poorest condition of any of the leading articles. On the whole, it may be said that a continuous improvement of business conditions over the preceding year characterized 1924.

I have the utmost faith in the development of China and Japan and the Philippines. They will meet their problems wisely and conditions will be stabilized in the course of time. The potential trade is almost beyond one's comprehension. No one should be discouraged about the ultimate possibilities of this commerce, but it is also true that the American business man who contemplates an expansion of business in the Orient, and particularly in China and Japan and Siberia, needs in the coming months to move with great caution, to keep his feet on the ground and exercise the same sound, careful judgment that he would use in the development of his business at home.

PROTECTION FOR AMERICAN SHIPBUILDING

By F. P. PALEN

Vice-President, Newport News Shipbuilding and Dry Dock Company



THINK Congress should protect the shipbuilding industry so the Standard Oil Company and the United Fruit Company will have their vessels built in the shipyards of the United States instead of foreign yards, as they are doing at the present time.

I have no criticism to make of the action of the Standard Oil Company and the United Fruit Company in placing their contracts in foreign shipyards, as they are doing exactly what I would do under our present laws.

My quarrel is, therefore, with our laws and not with the steamship owners. Laws which cause American citizens to buy vessels from Krupp's when at the same time they do not buy machinery or steel from Krupp's are not just and fair to the shipbuilding industry of the United States.

If the vessels ordered by Americans from foreign yards during the past two years had been built in the shipyards of this country, this work would have gone a long way towards keeping the shipyards going.

On the other hand, if Congress does not provide protection for the industry, which will be sufficient to cause the vessels required by American owners to be built in the United States, I can see no hope for the industry. I speak as a disinterested person, as I have no financial interest in any shipyard.

Congress may think that the machinery and steel industries are of more national importance than shipbuilding and therefore should be protected, but in time of war shipbuilding always has been more important and always will be, so it seems to me that as a matter of national defense as well as a matter of

equity, equal protection should be given to these industries.

If the President and Congress believe that shipbuilding should be protected so American citizens can have vessels built in the shipyards of the United States at a cost as nearly as possible on a parity with the cost of building them in other countries, then the problem becomes very simple. There are many ways of protecting the shipbuilding industry to accomplish this result.

American owners should be encouraged to build in the United States shipyards rather than forced to do so, and with this thought in mind I think the simplest and most direct method of protection will be the best.

I therefore recommend an investment by the government in vessels for foreign trade equal to the excess cost of building vessels in the United States, and in return for this investment the United States retain certain rights in the vessels from which a direct benefit will result, as well as the indirect benefit resulting from maintaining the industry.

In time of war, the United States has always paid excessive prices for ships, on account of its shipping policy. In fact, the United States spent, lost and wasted enough money on account of its shipping policy during the last war to protect its shipbuilding for the next one hundred years.

I appreciate that the United States has the right to commandeer vessels in time of war, but this right is of no value if there are no vessels under the American flag that are suitable for its purposes, as was the case during the Spanish War and the World War. We are approaching the time when the obsolete vessels must be replaced. The Standard Oil vessels and the United Fruit Company vessels, above referred to, will

not fly the American flag, and therefore cannot be commandeered.

If the United States will invest wisely reasonable sums year by year in vessels operated by American citizens in the foreign trade, it will benefit and build up its shipyards and shipping and will make available vessels when needed, at reasonable prices.

I have set forth these thoughts in the form of a bill for presentation to Congress, and I suggest that the shipbuilding industry request the President and Congress to provide protection sufficient to accomplish the results I have above outlined.

Tentative Bill for Protection of American Shipbuilding Drafted by F. P. Palen

An Act for Protecting the Shipbuilding Industry of the United States of America

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

Sec. 1. To provide vessels under the American flag that can be purchased or chartered at reasonable prices by the United States in time of war or national emergency; to provide for the purchase and charter of such vessels by the United States at reasonable prices; to provide for the replacement of vessels in the foreign trade as they become obsolete; to encourage citizens of the United States to build vessels to meet the demands for the proper growth of our foreign trade; and to maintain a force of workmen skilled in the art of shipbuilding in the shipyards of the United States: It is declared the policy of the United States to encourage and aid its shipbuilding industry sufficiently to cause ships to be built in the shipyards of the United States for the foreign trade. To accomplish this end, the United States will acquire an interest in the vessels built under this Act and will pay a portion of the cost of vessels so built.

Sec. 2. That the government of the United States shall have the right in case of war or national emergency to purchase or charter any of the vessels built under this Act upon the conditions and terms hereinafter set forth, that in the event a vessel built under the provisions of this Act is owned or operated in violation of its terms or the flag changed during the period the United States has an interest therein, the vessel shall be subject to seizure and sale by the United States and the rights of the United States as to its interests therein shall take precedence over all mortgages, claims, liens, etc., against the vessel, and notice to this effect shall be recorded in the Custom House at the vessel's home port and on the vessel's papers carried on board.

Sec. 3. That vessels built under this Act shall be owned by citizens of the United States as provided for in the Merchant Marine Act of 1920; the vessels shall be of the most modern design, and shall be approved by the United States Shipping Board; the vessels so built shall not engage in the coastwise trade of the United States; the price of vessels built under this Act, together with the price of changes made during the construction of the vessels, shall be submitted by the owners to the United States Shipping Board for approval.

Sec. 4. That there shall be paid from any money in the Treasury not otherwise appropriated, upon the warrant of the chairman of the United States Shipping Board and with the approval of a majority of the members of the Board, to the builders of vessels in the United States who conform to this Act a sum not less than 20 per cent or more than 30 per cent of the cost of each and every vessel so built; the Comptroller of the Treasury shall be and he is hereby authorized and directed to make and payments when duly certified by the chairman of the United States Shipping Board, and the sum of Twenty Million Dollars (\$20,000,000) shall be and it is hereby appropriated for payments to be made on vessels constructed under this Act; the interest of the United States in a vessel so built shall be depreciated at the rate of 5 per cent of the amount paid by the United States, per annum, and shall cease at the end of twenty years.

Sec. 5. In the event of a sale and change of the flag of a vessel built under this Act, before the interest of the United States ceases, the United States shall be repaid for the interest it holds at the time of sale.

Sec. 6. That in case of war or national emergency, the United States shall have the option of purchasing or chartering vessels built under this Act for a period of twenty years after the date of documentation, on the following terms:

If the vessel is purchased, the sum to be paid the owner by the United States shall be the original cost of the vessel to the owner (exclusive of the amount paid to the United States to the shipbuilder) less five per cent per annum for depreciation.

If the vessel is chartered, the sum to be paid the owner by the United States shall be at the rate of eleven per cent of the original cost of the vessel to the owner (exclusive of the amount paid by the United States to the shipbuilder), provided that all the costs of operation, maintenance, repairs, insurance, etc., are paid by the United States during the charter period and the vessel is returned to its owner in as good condition as when chartered, ordinary wear and tear excepted.

NOTE—The United States can give protection equivalent to Section Four of the Bill by making loans from the Construction Loan Fund equal to 50 per cent of the cost of vessels built in the shipyards of the United States for the foreign trade, without interest, and payable in twenty equal annual installments.

PANAMA MAIL STEAMSHIP COMPANY

(Continued from Page 353)

is now managing the Panama Mail Steamship Company.

With the branch offices likewise there is practically no change. E. T. Biven and Clay Hutchinson at Los Angeles, respectively, care for Southern California passenger agency and Southern California freight agency, while the Eastern passenger agency and the Eastern freight agency are maintained by J. P. Sutherland and A. C. Fels, both of New York City.

Conveniently located in commodious new headquarters at 2 Pine Street, San Francisco, with modern operating equipment designed for the work in hand, with operating personnel experienced and ambitious, the Panama Mail Steamship Company faces confidently a future of great promise. Many friends in California in the ports of Latin-America, and on the East Coast will be saying a hearty "God Speed" to this newest, oldest Pacific Ocean steamship company, and will be doing their bit to fill the holds with cargo and the cabins with passengers.



BRIDGE WORK IN A SHIPYARD

Our illustration shows one of the spans of the Dumbarton Bridge which are now being constructed and erected by the Moore Dry Dock Company to form a vehicular bridge across lower San Francisco Bay.

There are nine of these spans, each 225 feet long, by 24 feet wide, by 40 feet high, and each weighing approximately 315 tons. As will be noted in the picture, the span is erected on temporary piling structure built out over the channel, so that a barge can be floated up under the span by the tide and the span towed to its place in the bridge and landed from the barge directly onto the pier.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

THE PURCHASING POWER OF THE FISHING AND WORKBOAT FLEETS OF THE PACIFIC COAST

THE Pacific Coast of the United States and of the Dominion of Canada presents a vast stretch of ocean frontage abounding in rich commercial fisheries and a great network of harbors, rivers, and inland waterways wherein much freighting, towing, and pleasure cruising are available for the commercial workboat.

It is extremely difficult to obtain accurate data on the total number of motorboats employed on the Coast. Fishing boats work the various runs of fish from San Diego to Alaska, and totals of various ports overlap considerably. The fishing industry alone has a fleet estimated at not less than 30,000 boats, ranging from the one-man 12-horsepower Italian fishing boat type of the California Coast through the large halibut schooners of the Northwest with crews of fifteen to twenty-five men. Adding to the fishing fleet the commercial and pleasure power boats, there would be a total of not less than 40,000 comprising this great fleet, which gives employment directly to at least 100,000 men and is directly responsible for the support of at least half a million of our population.

This fleet, with its equipment, represents an initial investment of at least one hundred and fifty million dollars, and its annual expenditures for marine supplies, foodstuffs, new power plants, repairs, wages, insurance, and paint run somewhere around fifty mil-

lions of dollars. If there should be added to these figures the shore establishments incident to the fishing business, such as canneries, fish markets, the totals would be very greatly augmented.

The fishing fleet alone last year was responsible for products with a sales value of close to \$150,000,000, which places the fishing business of the Pacific Coast on a very high commercial plane.

Anyone who has been at all in contact with Pacific Coast fishermen during the past ten years must have noticed the tendency to take care of and renew equipment—a tendency which always accompanies times of prosperity in this class of industry. Not only is this reflected in the condition of the boats and their equipment, but as well as in the condition and nature of the accommodations provided by the various ports for taking care of three boats and in the sanitary arrangements of modern fish markets, fish canneries, and fish freezing and curing establishments. Seattle has provided, at great cost, municipal cold storage for fresh fish. San Francisco has a splendid artificial lagoon for fishing boats with wide walks which serve the double purpose of shaded anchorage and net drying and repair stands. Connecting with this lagoon are adequate boat and engine repair shops. Los Angeles has set aside safe harbor anchorage for the fishing fleet and is providing excellent facilities for canneries



View of a part of the fishing fleet which has headquarters in the harbor of Los Angeles, California.



Two views at fisherman's wharf, San Francisco, showing a few of the California type fishing boats in safe haven.

with deep water frontage to take care of the large runs of sardines and tuna.

These forty thousand power boats, many of them larger than any of the ships of Columbus, are scattered along the ten thousand miles of coast line that forms the Pacific Coast of North America from the Mexican border north to McKenzie Bay. Their services are indispensable to the life and comfort of a large part of the population contig-

DIVIDENDS FROM DAVY JONES By JOSEPH C. SAMPSON

ONE of the most spectacular marine fires in recent years was that of the Associated Oil Company's tanker Alden Anderson, which caught fire from an explosion in the hold while tied up at her dock at Avon, California, a few months ago, setting fire to the docks and drifting out into San Francisco Bay, where she finally stuck on a sand bar and sank, leaving only her after end above the water.

Several lives were lost in the explosion and fire, and the tanker was regarded by her owners as a total loss. The heavy steel sides of the ship crumpled and collapsed under the intense heat, as shown in one of the accompanying illustrations, and her $\frac{3}{4}$ -inch steel plates melted.

Ancient mariners looked her over and shook their heads; experienced salvagers looked her over and gave her up. She was to all appearances



A few halibut schooners and workboats at the plant of the Lake Union Drydock & Machine Works, Seattle, Washington.

a completely hopeless wreck.

But to the man of courage and wisdom even the "hopeless" salvaging job is full of possibilities and such a man appeared on the scene in person of Frederick D. Swank of Seattle, who bid in the wrecked ship for \$75,000, and has now about completed the task of cutting her up and getting her out of the channel.

Dynamite and expert divers loosened the plates under water, and

uous to this coast line. They are developing a race of hardy seafarers second to none in the world.

They are a very valuable and important part of the commercial life of the Pacific Coast and like the men of many another Pacific Coast industry they are rapidly assuming world leadership in the volume and value of their produce.

Those boat and engine builders who cultivate the Pacific Coast market find it an exceedingly profitable field. The ship chandlery houses of Pacific Coast ports do a thriving business with this mosquito fleet, and many commission merchants specialize in providing feed for the crews.

This business is still in its infancy, the Pacific Coast is still very young, and as one tries to visualize the future growth of wealth, population, and industry, the immensity of the prospect is staggering. Volume of business grows so rapidly that statisticians cannot figure fast enough to overtake it. With all this growth and increase there will be a correspondingly greater place for the workboat fleets of the Pacific and a greater market for all the items of equipment which go to make up the working plant of the commercial motor-boat operator.

the upper structure has been cut into pieces with the speedy, efficient new Purox Style E cutting torches, using Purox oxygen and Purox acetylene.

This somewhat dramatic marine episode illustrates the many industrial conquests that are being made daily by the oxyacetylene cutting process. There is always hope for the hopeless reclamation job.

THE MAHOE MAKES GOOD

By ANDREW FARRELL

COMplete satisfaction with the tug Mahoe in every detail was expressed by John A. Young, manager of Young Bros., Ltd., of Honolulu, on the vessel's arrival at Honolulu on June 4 from Seattle, where she was built. With a 120-foot barge in tow she made the voyage of 2407 miles in 13 days, 12 hours and 44 minutes, averaging 7.1 knots. Bad weather and rough seas were encountered during most of the voyage, the prevailing wind being on the port beam.

At no time did her Fairbanks-Morse full diesel engines give the slightest trouble. In fact, the one mishap, if it is worth describing as such, was the breaking of a glass and the loss of about a quart of lubricating oil just as the tug was entering the channel to Honolulu harbor. Her electric winch and steering and towing gear, built by Allan Cunningham Company, also evoked enthusiastic comment from Young. The vessel herself proved to be an excellent sea boat, reflecting credit

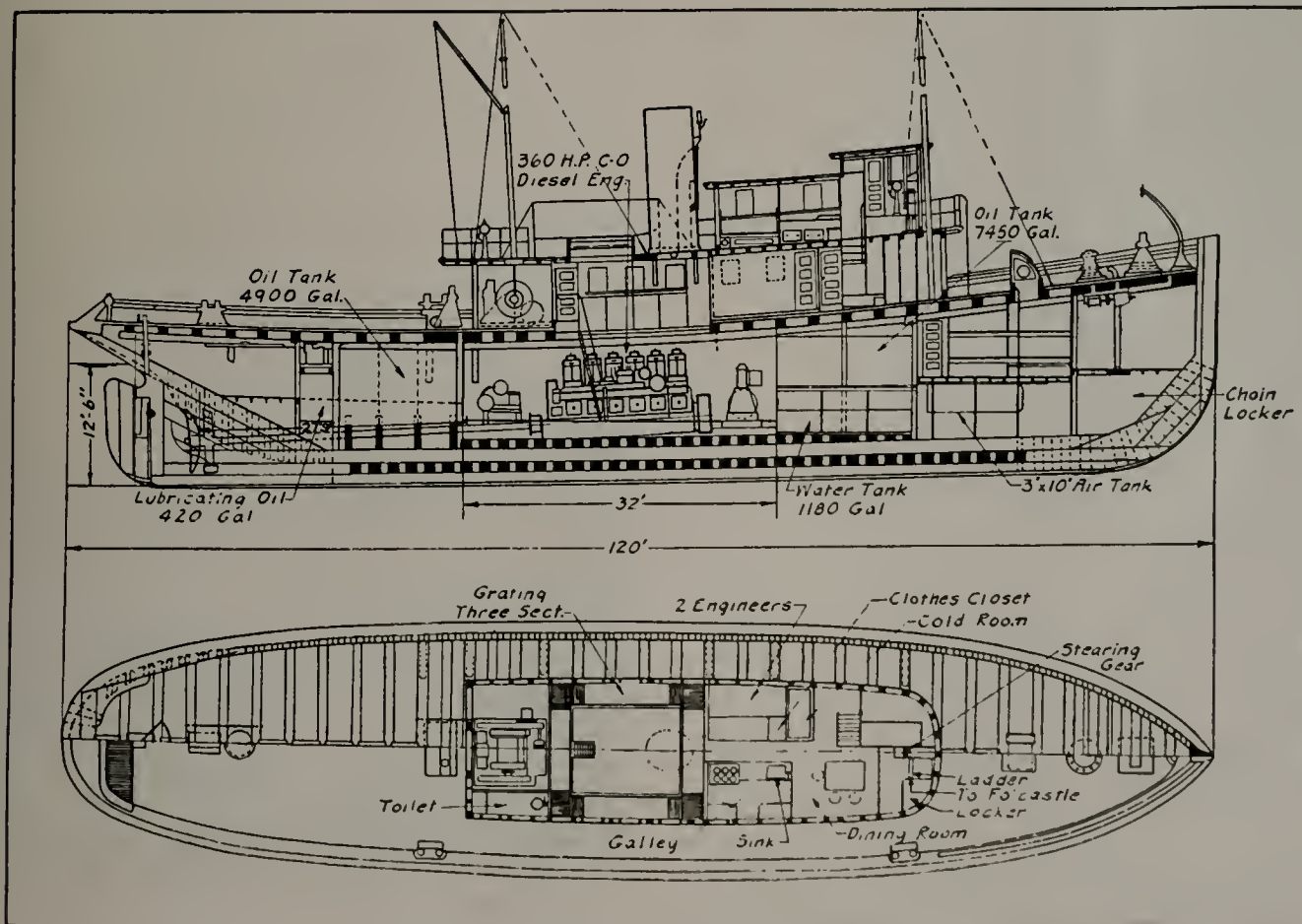
not only upon the Ballard Marine Railway Company of Seattle, but upon the naval architect, L. H. Coolidge of Seattle, who designed her.

The Mahoe is a very significant vessel in Hawaiian waters. She is the first full diesel tug to be stationed anywhere in the islands, and she also marks the almost complete conversion of the Young fleet of tugs to heavy-oil engines, five others having Fairbanks-Morse C-C "semi-diesels." Her performance will be observed closely, not only by shipping men, but by managers of industries on land. Hawaii seems to offer a highly promising field for diesels, and the expected success of the Mahoe's engines should prove a first-rate bit of advertising for American diesel engine builders.

As Young expressed it, the Mahoe was ready for service when she arrived. In view of the pains taken by Fairbanks, Morse & Company, however, it would have been surprising if



View of the stern of the twin-screw deep-sea tug Mahoe on the ways at the Ballard Marine Railway Company, Seattle.



Inboard profile and deck plan of twin screw seagoing tug Mahoe.



The arrival of the Mahoe at Honolulu. Top view shows in the center John A. Young, manager of the Young Brothers, Ltd., owners of the tug. Insert is T. W. Smith, general manager of Ballard Marine Railway Company, builders of the vessel. The lower view is the Mahoe off Honolulu, bearing on her stern the lei which is seen on the shoulders of Mr. Young in the upper view.

that had not been true. Robert F. Brandt of Beloit, Wisconsin, factory engineer, was sent to Honolulu on her maiden voyage to give the engines his personal attention and see that all went well, after he had been instructed by the company, in the installation of the engines, to do the best job possible regardless of cost.

Fuel oil consumption, said Brandt, averaged about 600 gallons a day, and lubricating oil about 16 gallons. At the beginning of the voyage her engines were turned over at 178 R. P. M.; then at 190, 210 and 230. At the latter she made 8.6 knots in a fairly smooth sea. Prior to her sailing from the Sound, she had a nine-hour trial, including the dock trial, at which she displayed a world of power. It is said, in fact, that although the engines are rated at 360 horsepower, they made 400 for 48 hours on the test stand; and that their maximum R.P.M. is 268, although they are rated at 250.

By days the Mahoe's runs from Tatoosh were: May 22, 147.3; May 23, 166; May 24, 179; May 25, 166; May 26, 171; May 27, 132; May 28, 164; May 29, 174; May 30, 184; May 31, 197.2; June 1, 170; June 2, 182.4; June 3, 191. On her first day out of Seattle she made 168.5 miles.

Extensive pineapple development on the islands of Molokai, Lanai, and Maui, the fruit to be canned in Honolulu, has led to the construction of the Mahoe, the acquisition by the Matson Navigation Company of a tug, and well-defined rumors of plans for the construction of still another. Several steel barges also have been or are being built for this business. The fact that the Mahoe will be used principally during the canning season for towing barges of pineapples is in itself a marked compliment to the depend-

ability of diesel drive, for pineapples must be canned promptly after being gathered, or the fruit deteriorates greatly. Any breakdown of towing equipment would be serious.

With her two big engines and twin screws, too, the Mahoe will be a great asset to salvage equipment in Hawaii. Within the last two years at least one vessel might have been saved by a tug as powerful as the Mahoe. Her wireless apparatus also is a marked advantage to her. Her total cost was about \$135,000.

The barge she towed to Honolulu was 120 feet long, 40 beam and 12 deep, with a draft of 3 feet, offering quite a target to the slapping of seas and wind, but no trouble was experienced in handling the cumbersome craft.

The Mahoe herself is 120 feet long, 24.6 beam; has a draft of 12.6 aft and 10.6 forward. Each of the two main engines is a six-cylinder, two-cycle Fairbanks-Morse full diesel; and she also has a 15-horsepower "semi-diesel" marine type Fairbanks-Morse engine driving a 30-kilowatt main electric generator, and a 7½-horsepower "semi-diesel" of Fairbanks-Morse manufacture driving a 4½-kilowatt generator. Her Edison storage battery, 140 volts, 600 ampere-hours, is sufficient to furnish power for all electrical equipment at once.

The tug has five air tanks, 250 pounds pressure; an 8-horsepower fire pump, throwing 150 gallons of water a minute at a pressure of 100 pounds; and another 100-gallon-a-minute pump, both electrically driven. Her fuel capacity is 19,900 gallons; lubricating oil, 400 gallons; fresh water, 1000 gallons, all sufficient for thirty days.

Fourteen persons made the voyage to Honolulu. Besides Young, Brandt and the crew, C. R. Miller, manager of the Seattle branch of Fairbanks, Morse & Company, and T. W. Smith, general manager of the Ballard Marine Railway Company, Seattle, were aboard.



Looking forward at the deckhouse of the Mahoe. Under the overhang at the after end will be seen the Allan Cunningham electric towing machine.

SOMETHING NEW IN PLEASURE CRAFT

By Miles C. Smith

THE new Cytherea, which was constructed by the Seacraft Corporation of California at their Wilmington, California, shipyards, may well be called the last word in comfortable appointments, as her owner, Victor Girard of Los Angeles, to whom all credit is given for her many innovations, displays his knowledge of what should and what should not be installed for comfortable quarters aboard ship.



The cruiser Cytherea on the ways at the yard of the Seacraft Corporation of California, Wilmington.

The Cytherea is 72 feet long overall, 69 feet at water line, 14 feet 6 inches beam, and draws 6 feet of water with a 32-ton rating, which she exceeds by about 8 tons, so that while not the largest pleasure craft afloat she is large enough to be seaworthy and comfortable. It is in the fitting up that the boat warrants distinction and sets a precedent which will undoubtedly be followed in the construction of other pleasure craft.

Starting with the power plant, there are two 90 horsepower motors manufactured by the Standard Engineering Company with twin screws for propulsion and two 18 horsepower Standard engines direct-connected to two 4½ kilowatt elec-

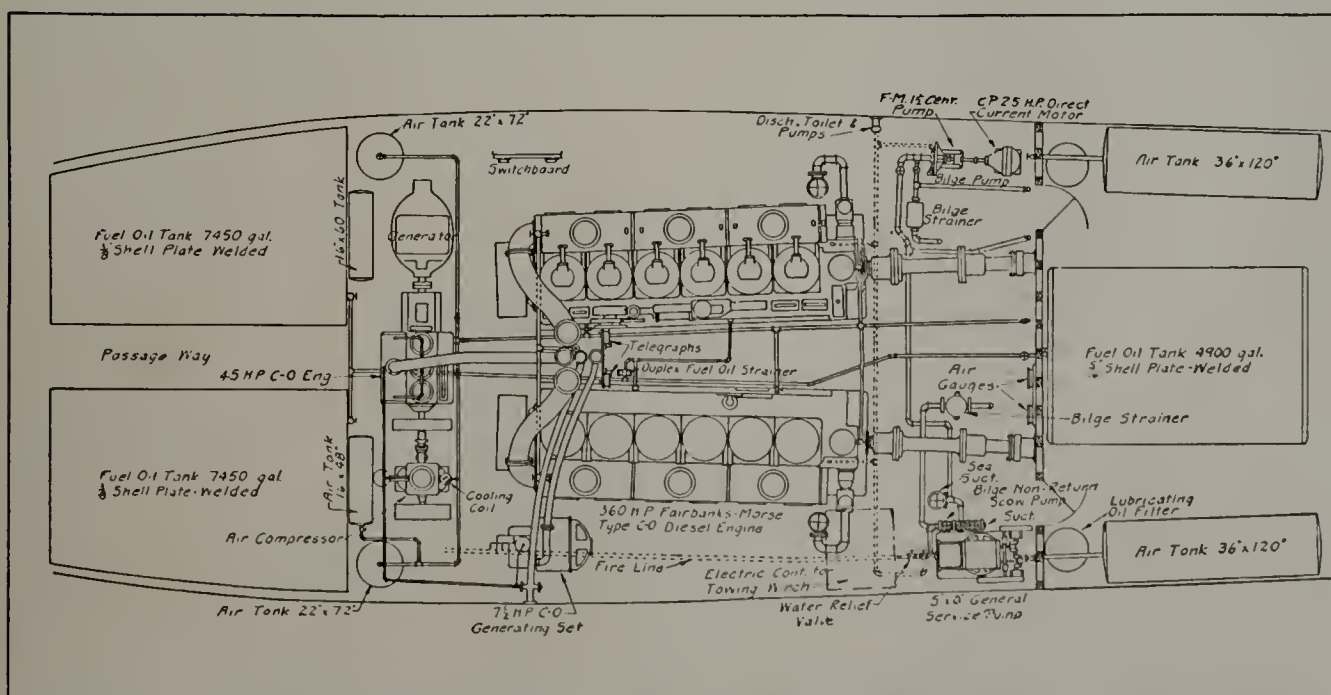
tric generators, which generate 110 volts direct current. The two generating units are entirely separate from each other, so that either or both may be operated at will, and the electric power generated is distributed through a 56 cell U. S. L. jar type storage battery. This arrangement gives ample storage capacity so that 110 volts direct current is available at all times. Throughout the engine room and in fact the entire boat, all pumps and other auxiliaries are electric driven. So aside from the propelling of the boat itself it may be said that the boat is electrically equipped throughout. For all four Standard engines the fuel used as gasoline. Storage capacity is provided for 1500

gallons of gasoline, 100 gallons of lubricating oil, and 500 gallons of fresh water. With all this ballast, however, it was found necessary to use about one ton of lead in her keel.

Passing from the engine room to the galley, here is a Standard electric range for cooking, a Hotpoint electric water heater, and a Frigidaire ice machine and refrigerator, as well as everything in the way of convenience for the preparing of food. Next aft is the bath which is spacious and well equipped with every convenience including hot and cold fresh water and hot and cold salt water for the shower. Sleeping accommodations are provided for four in roomy comfortable beds, not bunks. A very roomy glassed-in after deck completes the quarters for the owner. In the enclosing glassing of this after deck, the windows are large and lever-operated so that they may be readily opened or closed to afford ventilation. As to lighting, the entire boat has been equipped in every conceivable place with electric connections so that nothing may be wanted either inside the cabins or out in the way of illumination.

On the forward deck is another innovation for a boat the size of

(Continued on Page 392)



Machinery plan showing the arrangement of the two 360 horsepower Fairbanks-Morse diesel engines on the twin screw tug Mahoe.

NEW FIREBOAT FOR LOS ANGELES

A CONTRACT for a triple screw steel fireboat for the city of Los Angeles has been awarded to the Los Angeles Shipbuilding & Drydock Corporation, and this vessel is now under construction at their yard in Los Angeles harbor, San Pedro, California.

The vessel was designed by L. E. Caverly, who was appointed consulting naval architect for the city of Los Angeles, in collaboration with Ralph J. Scott, chief engineer of the fire department of the city of Los Angeles, and the design includes many novel features in fireboat construction.

In order to keep the vessel's dimensions as small as possible for rapid maneuvering in restricted spaces and to obtain the maximum water delivery and speed with a minimum of stand-by expense, all the power required for propulsion and pumping is developed by gas engines direct-connected to propellers and centrifugal pumps.

The hull is of steel throughout, with the exception of the fenders, which are of wood, and special precautions have been taken to limit fire hazard to the vessel itself. The principal dimensions are as follows:

Length over-all	99' 0"
Length between perpendiculars...	93' 4"
Beam molded	19' 0"
Beam over guards	20' 4 $\frac{3}{8}$ "
Depth molded	9' 7"
Draft, mean	6' 6"

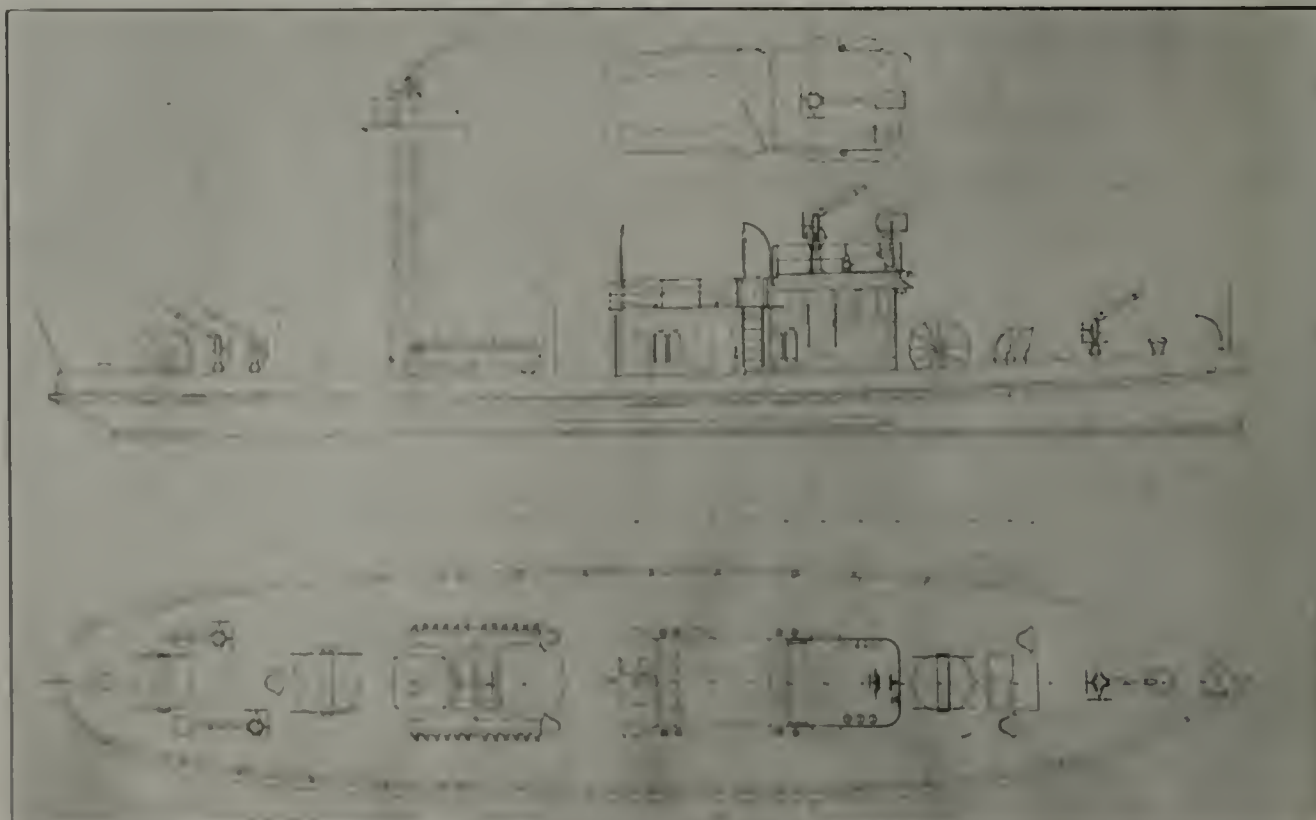
The hull is subdivided by three transverse watertight bulkheads forming a forepeak, forward hold, machinery compartment, and afterpeak, all bulkheads extending to the main deck, which is of steel for the

full length of the vessel. The deckhouse contains a raised pilot house, a nozzle and equipment room, a galley, and a toilet. A raised dome is provided over the after end of the machinery compartment and a companion way is located forward for access to the fore hold and to the forward end of the machinery space.

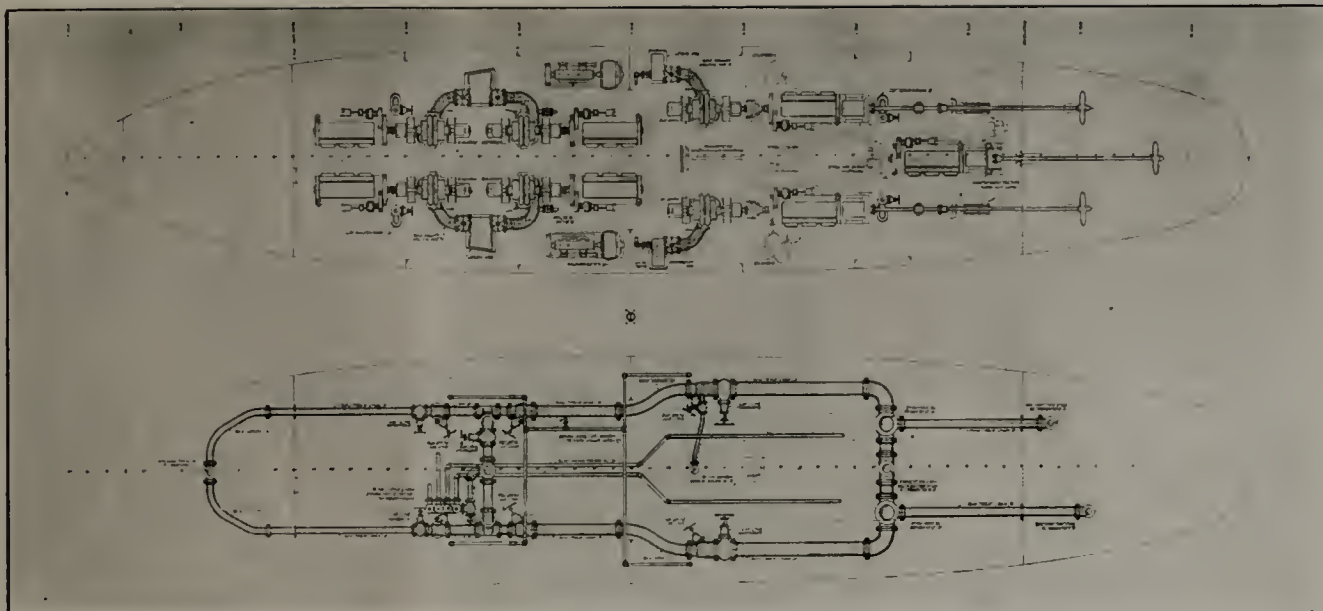
The fire-fighting equipment consists of five monitors, one located on the main deck forward, one on top of the pilot house, two on the main deck aft, and one on top of an electrically operated telescopic water tower having a maximum elevation of 44 feet above the water line. Each monitor is capable of delivering 3000 gallons of water per minute. There are two hose manifolds on the main deck, one on each side of the dome over the machinery compartment, each having twelve connections for 3 $\frac{1}{2}$ -inch fire hose. There is also a Foamite set of 300 gallons capacity, this equipment being located on top of the dome over the machinery space.

Fire hose is carried on four reels, one in the fore hold having a capacity of 1500 feet of 3 $\frac{1}{2}$ -inch hose, two swiveling reels on the main deck, each holding 1000 feet of 3-inch hose, and one swiveling reel on the main deck holding 1000 feet of 3 $\frac{1}{2}$ -inch hose. Stowage is provided in the deckhouse for an assortment of nozzles, an oxyacetylene burning outfit, diving apparatus, smoke helmets, and miscellaneous fire-fighting equipment.

Both electric and hand steering gear are provided, and the vessel is electric lighted throughout. A hand



Deck plan and outboard profile of triple screw steel fireboat for Los Angeles Harbor.



Machinery plan and piping plan for new fireboat for Los Angeles Harbor.

operated capstan is provided on the main deck forward for handling lines and anchor cable.

Fuel is carried in separate steel tanks located in the fore hold and after peak compartment. A water screen of perforated pipe is carried around the top of the deckhouse and under the upper fender to protect the vessel when operating close to a fire.

The power plant consists of seven Winton gas engines, each of 300 brake horsepower and two Winton engines, each of 25 brake horsepower. One of the 300 brake horsepower engines is located on the center line aft and drives the center propeller. Two of the 300 brake horsepower engines are located aft to drive the wing propellers and after fire pumps, cut-out couplings being provided so that these engines can be used for driving the propellers when proceeding to or from a fire, and for driving the after fire pumps at the scene of the fire. Four of the 300 brake horsepower engines are direct-connected to the forward fire pumps.

This arrangement provides a total of 900 brake horsepower for propulsion when proceeding to or from a fire, giving the vessel a speed of 17 miles per hour, and the center engine of 300 brake horsepower is available for maneuvering at the fire when the remaining engines are on pumping service.

The two 25 brake horsepower Winton engines are direct-connected to two 15 kilowatt generators, one of which provides all the electric power required for the steering gear and other auxiliaries, the other being in reserve.

The pumping plant consists of six Byron Jackson 4-stage centrifugal pumps, entirely of bronze, each having a capacity of 1700 gallons per minute at 200 pounds discharge pressure, giving a total delivery of 10,200 gallons per minute. Each pump draws from a separate sea suction and discharges through a check valve into a discharge header circuit, which supplies the monitors and manifolds on deck. Hydraulically operated valves are provided in the discharge line from each pump and at the base of each deck monitor. There is also a motor-driven bilge pump and air compressor, the latter being used for operating an air whistle.

Special provision has been made for the ventilation of the machinery compartment and the prevention of the accumulation of gas vapors in this space. Fuel

is carried in well ventilated spaces forward and aft of the machinery compartment, and fresh air is admitted into the engine room through ventilator cowls and louvers under the pilot house floor.

There are two motor-driven exhaust blowers located under the main deck abreast of the engine hatch, these blowers drawing through steel ducts from the vicinity of each gas engine and switch board and discharging through ventilators above deck. These blowers have sufficient capacity to change all the air in the machinery space every five minutes.

As a further precaution, a drip pan is provided under each engine to collect any gasoline or lubricating oil, with drains to a well ventilated closed tank under the engine room floor. This tank is connected to the bilge pump and the contents may be pumped overboard as found necessary.

The contract provides for completion within 150 days and the vessel is expected to be placed in service about October 1, 1925.

ATLAS DIESEL EXPORTS

MANY manufacturers are making diesel engines. Old firms that for years specialized in the building of high grade steam engines are now turning out internal combustion engines of the diesel type. Some of these firms make a feature of comparatively small powers, fitted for workboats and light craft. Of these perhaps the Atlas-Imperial Engine Company have sent out from their shops in Oakland to other states and countries more than any other similar establishment.

In a talk with the heads of the company recently, a Pacific Marine Review representative gathered that there are Atlas-Imperial diesels in thirty-five of the forty-eight United States and that the company have shipped engines to Honolulu, Papeete, Fiji Islands, Australia, South Africa, India, Chile, Bolivia, Panama, Mexico, Canada, and Alaska, and have orders for deliveries to Argentine Republic and Brazil. Incidentally these shipments are in powers up to 350 horsepower.

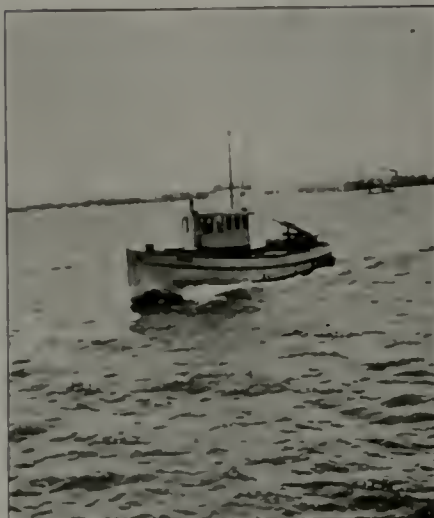
One installation, that of two sets of 6-cylinder 170-horsepower are now being placed in a workboat at Shanghai, China.

A THOUSAND MILES ON LUBRICATING OIL FUEL

CAPTAIN Tom Bagalini, owner and master of the fisher-workboat *Invincible*, a 73-foot craft that goes far afield from San Diego in search of the schools of fish off the Mexican Coast, swears by the diesel engine. And well he may, for the results obtained by the 90 horsepower Union unit in the vessel named have been remarkable, to say the least. Formerly it was almost impossible for these craft to stay out for any length of time or to make long voyages under power, as the fuel necessary to be carried, to say nothing of the expense, was prohibitive if engines were continuously used. However, with the diesel engine a trip of 24 days' duration, with steady running on an average of 20 hours per day, is easily negotiated.

An amusing as well as instructive incident happened lately to the boat in question. It was thought possible to make three round trips without refueling, due to the fact that her fuel consumption was so low. They had previously made two, with much fuel to spare in tanks at completion of the runs. So three round trips were attempted. Bad weather and heavy head winds, however, marked the last voyage, and the fuel ran low. Down along the Mexican coast fuel oil is hard to get. They managed to work into one of the southern ports, but could obtain no fuel oil. All that was available was a quantity of cheap lubricating oil used around the rougher machinery of the mines, such as dump-car oil, etc. A number of barrels of this was taken, and with some misgiving was fed to the diesel engines, which took to it all right and plugged along sweetly for the thousand mile run home.

Arriving at San Diego the engines were opened up, with the expectation that there would be much carbon, dirt, and other stuff to remove. However, none was found, the diesels having digested the strange food



The San Diego fishing boat *Supreme*, powered with a 75-horsepower Union diesel engine.

der cleanly and well. Had the regular gas engine been installed instead of a diesel they would have been stuck. Captain Tom says he is not afraid to try almost any fuel in his diesels now, asphalt sidewalks, only, barred.

Another diesel-engined craft engaged in the same fishing trade, the *Oceana*, handled by Captain M. O. Medina, a 65-footer, has made over 50,000 miles without lay-up or overhaul of engines, with an average sea speed of 12 knots. She has a 75-horsepower Union diesel engine and her fuel consumption has never exceeded 3 gallons per hour. They use 60 cents worth of lubricating oil per 24 hours, and this could be cut in half if the old oil was filtered. However, at so small an expense it is not thought worth while to bother with the old oil and fresh is used instead.

There are several more of these diesel-engined vessels making the 2000-mile round trip from San Diego, and so far none of them has been delayed from faulty engine running. This shows that San Francisco Bay shops can and do turn out about the best sort of machinery made anywhere for these kind of vessels. No wonder that folks in foreign ports make so many inquiries regarding the diesels built here.

Workboat Notes

TWIN-SISTERS OF THE PACIFIC

THE two sister ships, *Enterprise* and *Nisshin*, now under construction at San Pedro, California, will be ready for deep sea service not later than September first, it is reported by their

builders, the Al Larson Boat Works of the southern port.

The *Enterprise* and the *Nisshin* are being built for two different companies, prominent Japanese fishing organizations, but are almost duplicates and are referred to by

NOYO RIVER

The fishing fleets of the Pacific Coast follow the runs of salmon, tuna, and surimi up and down the long stretch from San Diego to Herring Strait. The mouths of many of the small streams along this stretch form good harbors for the small craft and at many of these points there are villages of fishing folk. Our picture shows some of the boats and houses at the Noyo River on the California coast north of San Francisco.



the builders as the "Twin Sisters of the Pacific." They are bait fishing boats to be used for Tuna fishing off the coast of Mexico, also to ply between San Pedro and Mexican ports.

It is claimed by the builders of these boats that they will be the most modern and complete fishing boats turned out of the San Pedro harbor during the present year. They will be 95 feet long, 20 feet beam, and 7½ feet draft. Their round trip cruising radius will be 3000 miles, equivalent to a trip across the Atlantic, which will give a very good idea of the service they will enter.

Both the Enterprise and the Nishin are to be powered with 200 horsepower Western-Enterprise diesel marine engines, manufactured by the Western Machinery Company of Los Angeles and San Francisco, builders of both diesel and distillate engines for stationary and marine service. The sale of the Western-Enterprise engines to the Japanese companies follows the use of many of these engines by similar organizations during the past few years, who have found them to be ideal in efficiency, economy, and dependableness for boats of this character.

Another Western - Enterprise equipped vessel, the purse seiner Humanity, recently equipped with a 110 horsepower diesel, will leave the latter part of June on its first trip into southern waters.

ENTERPRISE SALES

That the Western-Enterprise diesel is maintaining its reputation for excellence of design and sturdiness in operation is evidenced by the records of sales during the past ten or twelve months. There have been 45 diesels made at the San Francisco shops of a total of 5000 horsepower. These have gone to Seattle, Honolulu, Canadian and other foreign ports. In addition to this number there are at present on the floor in process of manufacture a 135-horsepower unit for Seattle and 165-horsepower and 125-horsepower units for San Pedro, also an engine of 165 horsepower for the interior of Mexico, which will be used for stationary power purposes. The others are all for marine work. Work has also been commenced on a 200-horsepower engine for a fishing company of San Diego.

The Los Angeles shops of the company are also busy and have shipped some 4000 horsepower in diesels besides over 300 units of gas engines for the oil fields. Among the new marine jobs recently installed were



The Beryl E. cannery tender recently built by J. C. Johnson's Shipyard, Port Blakely, Washington, for the Sunny Point Packing Co., Seattle.

the engines of 165 horsepower for main propulsion, together with a 110-horsepower engine for pumps, lighting, and other auxiliaries.

STANDARD EXPORTS

The Standard Gas Engine Company, Oakland, California, as yet have not placed on the market a diesel motor for either foreign or domestic use, but still ship quite a number of their old-line Standards to different parts of the world. South America takes many, mostly of the 10 and 12 horsepower type, handled by W. R. Grace & Company, agents for that locality. The Hawaiian Islands also absorb units regularly, over 30 sets having been sold

there during the past year. Canada, Tahiti, New Zealand, and Australia also are good customers. Seattle, San Pedro, and San Diego demand new engines and at these ports are carried considerable stocks of spares, etc., that service may be given easily and quickly to users of this well-known type of workboat motor.

The Standard company is working on a diesel engine which will no doubt be as favorably received as the gas engines. Before this new motor is sent out, however, it will be subjected to the most rigid and trying tests to insure its ability to compete in every way with the conditions existing now, as well as to uphold the record of good work done in the past by the Standard.

UNION SALES ABROAD

Union diesel engines manufactured by the Union Gas Engine Company, Oakland, are being sold far afield, and like the Union gas engines they are a credit to the skill and ability of the San Francisco Bay engineers in turning out a fine product. Several units have been sent to South Seas ports for use in trading vessels there. Three sets were to replace the too-expensive gas engine, and another new set to be the power plant of a new trading vessel. Quite a number of diesels have also been sent to Vancouver to be placed in boats to operate in the Canadian waters. On the whole, business is good in this line, and without doubt the repeat orders, of which several have been received, show excellence of the motor.



The Frevilla, motor cruiser built by George Kneass, San Francisco, for Hart Weaver.

HOME AGAIN

Pacific Coast war-built tanker latest addition to the fleet of Standard Oil Company (Calif.)

IN the reports of ship sales, there appeared recently the simple announcement, "Edward P. Farley Company of New York to Standard Oil Company (Calif.), the British tanker Montrolite."

Back in 1918, when the Pacific Coast shipbuilding yards were making unsurpassed records in the construction of steel hulls, there was launched at Seattle from the ways of the Ames Shipbuilding Company, a tanker. This vessel was covered with war paint, as shown in our upper illustration, and was christened Montrolite. The Imperial Oil Company had ordered her built under the supervision of the marine department of the Standard Oil Company (Calif.)

Her principal characteristics were and are: length, 419.6 feet; beam, 57.2 feet; depth, 30.0 feet. Her gross measurement is 6835 tons, net 5255. She is built with longitudinal framing on the Isherwood system, and is powered with three Scotch marine boilers supplying steam at 180 pounds pressure to a pair of Westinghouse turbines connected through double reduction gearing to a single screw shaft.

After several voyages under the American flag, she was transferred to Canadian registry. Early in 1925 she was bought by the Edward P. Farley Company of New York, who in turn sold her to the Standard Oil Company (Calif.). She was delivered in New York harbor June 26, 1925, and shortly thereafter at the plant of the Morse Dry Dock & Repair Company, Brooklyn, the Mon-



The tanker Montrolite in her war paint.



Raising the American flag over the tanker Montrolite on the occasion of her return to American registry.

trolite was returned to American registry and the Stars and Stripes once more floated out over her stern

as shown in our second illustration.

G. E. Pendergast, superintendent of operations of the Standard Oil Company (Calif.), was sent to New York to take over the vessel. Captain Joseph Fox was sent to bring her round to San Francisco. Vincent Carroll was inspector on the job and acted as chief engineer on the voyage out.

The Montrolite adds 73,000 forty-two gallon barrels to the capacity of the bulk oil tanker fleet of the Standard Oil Company (Calif.)

A FLETTNER RUDDER INSTALLATION

IN EUROPE many seagoing vessels are being equipped with the Flettner balanced rudder and this device is giving very fine results. The following extract from the trial trip log of a recently equipped motorship is characteristic of these results:

The motorship Sorrento, 2700 gross tons, of the Robert M. Sloman, Jr. Line, Hamburg, made a trial trip on May 20, 1925, covering two hours, with the object in view of testing the Flettner rudder with which the vessel is equipped. The rudder is operated directly from the bridge, and during the trial trip it was found that one man at the helm could maintain the course with the greatest ease and that the vessel answered her helm immediately.

The diameter of the complete steering circle with the rudder hard over, either port or starboard, was about two ship lengths. The turning of the handwheel to hard over position was completed by the helmsman in a very short time and without any effort whatever. When going down the River Elbe, the vessel was first turned perpendicular to the stream and thereafter brought

(Continued on Page 390)



The tanker Montrolite latest addition to the fleet of the Standard Oil Company (Calif.)

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

ELECTRIC SIDE-WHEEL FERRY

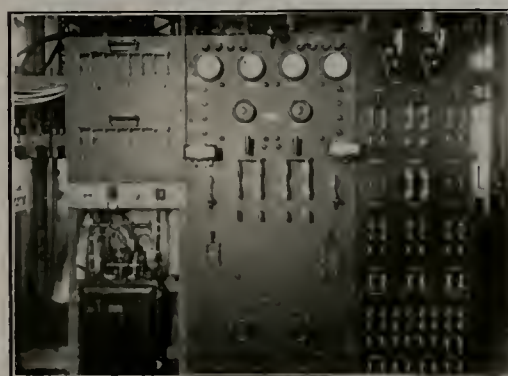
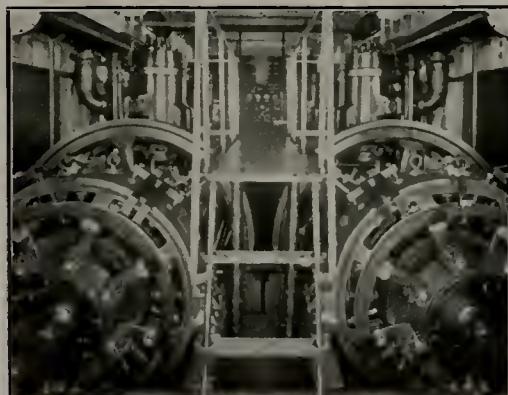
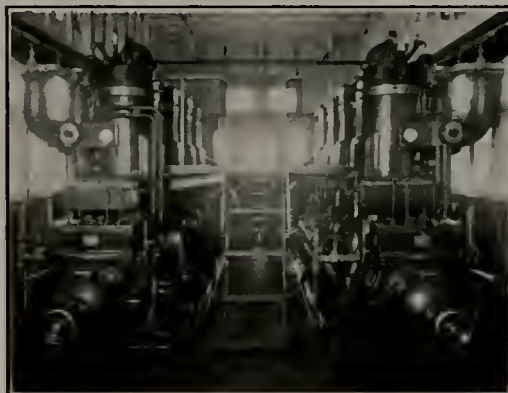
AN important step in the progress of river navigation was made on May 14, 1925, when the diesel-electric side-wheel ferry Forman M. Coots was christened by the Falls Cities Ferry & Transportation Company, operating between Louisville and Jeffersonville, Indiana. This installation is the first application of the diesel-electric drive to a side-wheel ferryboat, and there are many interesting features connected with the arrangement of the equipment.

This is a converted boat, as it was formerly operated with steam equipment under the name of William S. McChesney. The hull was built by the Howard Ship Building Company of Jeffersonville, Indiana, in 1913 with a length of 172 feet, a beam of 45 feet, depth 7 feet, draft 30 inches, and a tonnage of 490 net.

Due to the high cost of operation with the steam equipment, it was decided to convert the vessel to diesel-electric drive. The boilers were formerly located on the main deck and the engines in the hold. The space occupied by the boiler installation was laid out to take care of the new engine room with the space in the hold for the auxiliaries.

After careful consideration it was decided to install two diesel engine units of sufficient size so that one engine could operate the ferry for ordinary schedule conditions and for ordinary stages of the river. It was felt that the additional factor of safety in having a reserve unit would more than offset the additional cost of the two unit drive.

Two Fairbanks-Morse type "Y" diesel engines, each rated at 240 brake horsepower at 257 revolutions a minute were therefore installed. These are 4-cylinder engines of the 2-cycle, airless injection type. The diesel engines are each direct connected to a General Electric Company 175-kilowatt, 257-revolutions a minute, 230-volt, 760-amperes, compound wound, direct current generator. These generators furnish current for the main motors, electric auxiliaries, and lighting.



Top to bottom: Diesel-electric side-wheel ferryboat on an Indiana river; looking aft between diesel-electric generating sets; looking forward between diesel-electric generating sets; and switchboard.

Complete control of the electrical equipment is centered in the engine room switchboard. This board is made up of three panels. The center panel is provided with the necessary equipment for controlling the voltage of the two generators, switches for disconnecting the generators from the motors, and for connecting the two motors across either generator. At the left is the controller by which the engineer can regulate the speed of the main motors driving the paddle wheels. Another one of these controllers is located in the pilot house, as ordinarily the pilot has complete control of the ferry from that location. If it should be desired, however, to transfer to engine room control, the two large switches shown on the panel at the left are thrown to the down position. In such case the pilot signals the engineer in the usual way and the speed of the driving motors is controlled by the engineer.

With the exception of a small engine-driven air compressor, all of the auxiliaries are electrically operated. The circuit switches, which control these auxiliaries, are located on the panel at the right. The fire pump, air blower for blowing air on the commutators of the main motors, sanitary pump, steering motor, motor generator set for 110 volt lighting, bilge pump, and electric air compressor for supplying starting air for the diesel engines, are handled from this panel.

Another feature of the engine equipment, which is in line with the latest practice, is the use of pyrometers for determining the temperature of the exhaust. A thermo-couple is located in each exhaust pipe, and a multiple point switch, placed on a small panel at the end of the engine, is used to cut any one of the thermocouples on to the indicating pyrometers on the center panel of the switchboard. It is therefore possible for the engineer to keep an accurate check on the operating condition of each cylinder.

The engines are also equipped with speed regulators, so that it is possible to slow them down

while at the dock if desired. Hand wheels on the other end of the engines regulate the setting of the governor springs and hence control the running speed.

Each of the two side wheels, which are 24 feet in diameter, 10 feet wide, with 24-inch paddles, is driven by a 175-horsepower, 425-revolutions a minute, 230-volt, shunt wound, direct current motor. Each motor is geared to a side wheel through double reduction spur gearing. Motor pinion meshes with first gear on jack shaft carried on motor frame. Jack shaft pinion meshes with large gear on inside of paddle wheel.

The switchboard busses and switches are so arranged that it is possible to secure several combinations of energy supply. Where both generators are operating, each one drives its own motor or each generator can drive both motors. The generators are not arranged for parallel operation, as the independent drive arrangement was considered to be more flexible and to offer a greater factor of safety.

The service trips already made with this ferry have demonstrated that it will be operated at a low fuel



View showing one of the motors driving paddle wheel of diesel-electric side-wheel ferryboat. The jack-shaft shown connects with paddle wheel through a pinion meshing on large spur gear.

cost, that be cleanliness due to freedom from smoke and soot is appreciated by the passengers, and that the quick response with pilot house control is a decided advantage.

The engineering work connected with the design of the diesel-electric drive was worked out by Wm. A. Ingram, engineer of the Falls Cities

Ferry & Transportation Company, in conjunction with the engineers of Fairbanks-Morse & Company, who supplied the diesel engines and a part of the auxiliary equipment, and the General Electric Company, who supplied the electrical propulsion and control equipment.

TWO INTERESTING CONVERSIONS

Henry Ford Adopts Sun-Doxford 2-Cycle Diesel for Large Seagoing Freighter and for His Own Private Yacht

THE Sun Shipbuilding & Dry Dock Company, Chester, Pennsylvania, are now busy converting to diesel propulsion two vessels for Henry Ford.

The first of these is the East Indian, a freighter of 11,680 deadweight tons capacity, built during the war in Japan for the United States Shipping Board by the Uruga Dock Company, Ltd. This vessel is 440 feet long, 58 feet beam, 40 feet molded depth, 28 feet 6 inches draft. She is twin screw, with triple expansion engines and Scotch boilers.

In the conversion, one of her boilers will be retained, together with deck winches, capstan, windlass, main feed pump, and bilge pump. Her generators will be taken out and rewound for 240 volts. The steam engines driving these generators will be discarded and in their place will be installed two 225 horsepower Worthington diesel engines of the 2-cycle, solid injection type.

For the main propelling units there will be substituted a set of Sun-Doxford opposed piston, solid injection engines of 2500 brake horsepower each. These engines will each have 4 cylinders of 21 1/4-inch diameter, 85-inch combined stroke operating at 85 r. p. m. These engines will have separately driven auxiliaries, with the exception of the scavenging pumps.

The auxiliaries of the ship are so arranged that in operation at sea all necessary auxiliaries are electric-

ally driven. Notable among these are two air compressors of the Worthington feather valve type, one electric steerer, two centrifugal separators, one for lubricating oil and one for fuel oil.

At port all auxiliaries will be operated by steam. To facilitate this there will be installed a new steam condenser, a combined air and circulating pump, and a feed water heater. The boiler retained is arranged so as to be heated either by exhaust gases from the diesel engine or by fuel oil and forced draft firing.

The Sialia is Mr. Ford's old steam yacht, which is to be converted to diesel drive under the supervision of Henry J. Gielow, naval architect of New York, and is to be lengthened by 25 feet.

The Sun-Doxford engines to be used in this yacht are of a very special design. The highest grade of alloy steel forgings are to be used in the rotating and reciprocating parts, and in the columns and spacing pieces aluminum is to be used in the place of cast iron, the engine being very carefully designed with the idea of obtaining maximum efficiency and reliability with light weight, compactness, and highly finished appearance.

The installation is twin screw, the Doxford engines developing 650 brake horsepower each at 200 revolutions a minute.

PORTS OF THE PACIFIC

IMPROVEMENTS DEVELOPMENTS ACTIVITIES

Japan

Yokohama. The Yokohama Silk Conditioning House, one of the largest silk exporting firms in Japan, plans the construction of another warehouse, in addition to the three now under construction. It will have two elevators and will have about 5000 square feet of area.

Tokyo. A harbor to rival Yokohama in shipping trade is planned for Tokyo, to be built at the mouth of the Sumida River at a town by that name. Plans were drawn up during 1922, but owing to the earthquake of September 1, 1923, work has been set back and a revision of plans was made necessary. The first part of the program calls for the construction of a breakwater of 2880 yards, and dredging at the mouth of the river so as to reclaim land for industrial and terminal sites. At present the harbor can only accommodate 50 vessels. When proposed dredging work is completed the harbor will be capable of caring for 100 steamers of 5000 tons capacity at one time. An extensive system of canals is being built in and around Tokyo, so that with the completion of this port economical transportation will be possible throughout the metropolitan area connected with Tokyo.

Nagoya has laid before the Central Government a proposal to construct a canal from that port to a near-by anchorage. The canal will be 300 feet wide and cost in the neighborhood of 16,000,000 yen.

China

Fuchau. A powerful dredge has been recently completed in England and is now ready for work on the channel of the Min river between Fuchau and the Pagoda Anchorage. Harbor improvements were recently completed at this port.

British Columbia

Prince Rupert. The Dominion Parliament has appropriated \$150,000 for commencing construction work on the grain elevator for which foundations are now being built. A sum sufficient to complete the work is to be provided before the close of the present session of Parliament. The elevator is designed to hold approximately 1,250,000 bushels of grain and is to be of the circular bin type.

Port Mann. The Government of

Canada has authorized the new Westminster Harbor Commission to issue bonds to finance the construction of a reinforced concrete grain elevator at Port Mann, capacity 400,000 bushels.

Vancouver. A. Aivazoff of this port announced recently that he has under consideration plans for the construction of a \$2,000,000 cold storage plant, together with deepsea berths for the ready accession of ships to the products of British Columbia, such as fresh meat, butter, vegetables, and fish. If Mr. Aivazoff's plans do not materialize the city government will undertake the work.

The Vancouver Harbor Board is contemplating the erection of a special wharf and cold storage plant for fishermen at that port to cost about \$240,000. Other plans, including the construction of two new wharves, are under consideration, and the Dominion Government will be asked for an appropriation of \$1,350,000 to cover the cost of this work.

Antofagasta, Chile, recently awarded contracts for extensive port construction. The names of the contractors may be obtained by applying to the U. S. Department of Commerce, reference 35X.

California

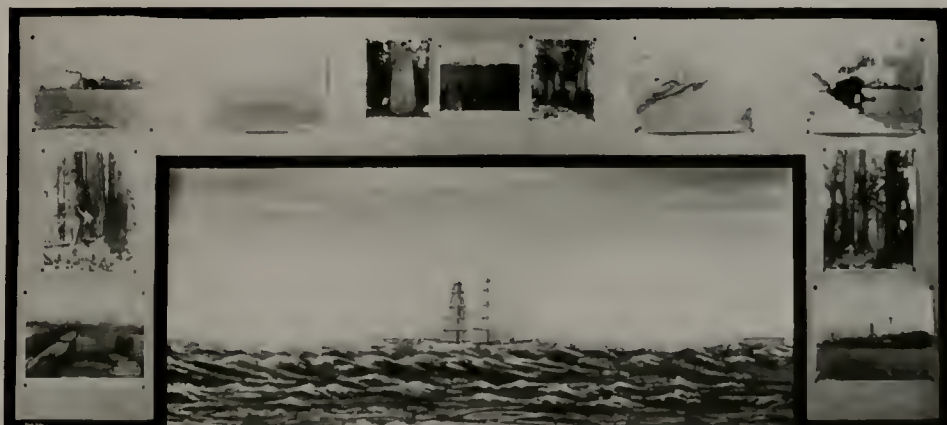
According to reports from Washington, members of the Rivers and Harbors Committee of Congress have agreed to make a tour of California ports during this fall to inspect the various proposed rivers and harbors projects which will be considered by Congress when it convenes in December. Among the harbor proj-

ects to be inspected is Stockton's \$4,407,500 deeper-water project.

Long Beach. The Hauser Construction Company of Oakland was awarded the contract July 3 for the construction of the new Long Beach breakwater, two moles, and a number of bulkheads in the city's outer harbor. The Hauser Company submitted a bid of \$1.70 per ton of rock used on the project. The breakwater itself, independent of the mole and bulkhead, will cost about \$1,900,000. Other bids submitted were: United Dredging Company, \$1.843 per ton; W. A. Bechtel, Los Angeles, \$1.92 a ton; Daniels Contracting Company, San Francisco, \$2.20 a ton for the entire job or \$2.47 for the breakwater; William Johnson, Los Angeles, \$2.35 per ton for the whole job. Rock for the breakwater and bulkheads will be shipped from the Declassville quarries near Riverside.

Los Angeles Harbor. Several projects which will tend toward the improvement and development of this port have been announced recently. One of these is the announcement by C. M. Fuller, president of the Richfield Oil Company, that they will shortly commence the construction of a marine terminal at Long Beach on a 1200 foot frontage next to the Dollar Steamship Line to cost \$1,000,000. Mr. Fuller also reports that he has purchased a tanker of 35,000 barrels capacity from the American Ship Building Company to be delivered at New York in September.

Bids will be asked shortly by the Los Angeles Harbor Board for the construction of footings and deckings at Berth 230 A and B, piles for which have already been driven.



An effective display used by the Aberdeen Chamber of Commerce in advertising Grays Harbor at the Twelfth National Foreign Trade Convention, Seattle.

The State Railroad Commission has granted permission to the Harbor Board to build a viaduct at Dominguez Slough, Wilmington, where the Anaheim highway now cross the Union Pacific Railroad tracks. The Santa Fe Railroad Company has been granted permission to build tracks into the harbor and to use the Dominguez Slough as an entrance point. The cost of the viaduct is estimated at \$553,000 and will be financed jointly by the various railroads, the harbor commission and the city.

Newport. The supervisors of Orange County have decided to call a harbor bond election October 7, next. The ballot will carry two propositions, one for \$650,000 to repair the entrance to the harbor and restore the breakwater which was washed out last winter, the other for \$550,000 to dredge and improve the inner harbor.

Santa Barbara. Prior to the recent earthquake, Santa Barbara and Montecito residents were discussing a bond issue of \$750,000 for the construction of a yacht harbor. \$200,000 had been donated by Max Fleishman, a resident of Montecito and another \$100,000 was promised to increase the fund to one million dollars. The plans already drawn are for a yacht harbor only, but it is hoped that sufficient money could be raised to develop a commercial anchorage also.

Oakland. The American Dredging Company of San Francisco was awarded contract by the U. S. Army Engineers for the dredging of Oakland inner harbor, as the first step in a harbor development plan. The work will cost \$354,614.50. The Oakland city council awarded contract to A. W. Kitchen for construction in a dike from the foot of Dennison



street to the eastern end of Government Island. This dike is designed to increase the tidal flow between the island and the Alameda side of the harbor and thereby prevent the newly dredged area from filling up.

Bids have been asked by the Oakland City Council for the construction of a garbage conveyor wharf at the foot of West Fourteenth street to cost in the neighborhood of \$65,000. The wharf is to be built immediately. Under a new plan, contract has been awarded to R. E. Christie Company to haul Oakland's garbage beyond the Golden Gate to be dumped. Two ships for that purpose will be required.

Alameda. The Encinal Terminals will shortly begin construction of a \$110,000 warehouse on the second unit of their project.

Richmond will shortly see the realization of plans which have been under consideration for several years for a dock for deep-sea vessels in the inner harbor. Dredging is now under way at the site and bids were called during July for the timber dock to cost about \$85,000.

Washington

Seattle. The Olympia Calpet Refining Company was recently incorporated as a subsidiary of the California Petroleum Corporation, with capital stock of \$500,000 and with H. F. Alexander, president of the Pacific Steamship Company, Joshua Green of the Puget Sound Navigation Company, R. Stanley Dollar, and other important Seattle shipping men holding stock. The present plans include the establishment of a distributing center for fuel oil and a refining plant at Smith Cove.

Port Angeles recently voted bonds for \$440,000 for the construction of a port commission dock.

Oregon

Portland has excellent facilities for the handling of bulk cargoes and a great many shipments of ores and concentrates from Idaho are being shipped to Europe via Portland. Of even greater moment is the growing bulk grain trade of Portland, this city being one of the leading wheat shipping ports on the continent. Balfour, Guthrie & Company are now constructing a 10,000-ton elevator to be followed by another of 8000 tons capacity. It is rumored that John T. Shibe, baseball magnate and grain exporter of Philadelphia, is contemplating the construction of a grain elevator to cost a million dollars.



San Diego's new pier freight shed.

SAN DIEGO

The two views shown on this page give an excellent idea of the type of construction employed at the new freight unit of San Diego's municipal pier. It is interesting that the steel for this pier shed was fabricated at the Moore Dry Dock Company, Oakland, California. It will be noted that the layout of the pier follows the best practice in that ample room is provided for double trackage between the side of the shed and the pier edge. The port of San Diego is rapidly growing in importance in intercoastal and contiguous foreign trade.

AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

DOUBLE SEAL DIESEL PISTON RINGS

ONE of the great problems confronting the diesel operator has been to keep operating engineers contented. And to do this you must help him overcome his greatest annoyance—that of piston ring trouble.

The compression blows past the piston rings, carrying down the lubricating oil off the cylinder wall, causing a vapor of oil to fill the engine room. It is not pleasant to work where this condition exists. In time, this oil vapor settles over the entire engine room, making it impossible to keep the engine room clean. The engineers would not be worried half as much if the piston ring problem only affected the appearance of their engine room; but as a result of this blowing, the engine loses its full efficiency and they must constantly pull pistons and replace rings. When this happens, other important maintenance work is usually neglected.

Double Seal diesel piston rings have become very popular with diesel engine operators and engineers because these conditions have been eliminated by their use. The Double Seal rings have made wonderful progress also in the oil engine field, for the reason that they will hold full compression in cylinders that are badly worn. This is possible because of the fact that the construction of this ring completely seals the piston groove across the bottom of the ring as well as sealing the cylinder wall. With this type of construction the Double Seal piston ring readily adapts itself and holds full compression under exist-

ing conditions as successfully as in new cylinders.

Ring Joint Clearance

In fitting rings in worn cylinder, or, in fact, in any cylinder, they must be given a reasonable joint clearance. Fit a ring at the small part of the cylinder and then check at the large or worn part and you will find the gap has opened up more than three times the amount of wear in the liner. For example, a ring fitted without clearance at the small end of a cylinder which is tapered .030 inch will have a gap at the joints of more than .090 inch when it reaches the point of extreme wear. When rings are correctly fitted with the proper clearance and are seated in or conformed to the cylinder, the gap constantly increases as the face of the ring wears. This is what happens with all ordinary piston rings. But this trouble has been completely overcome by the Double Seal type ring, which is so constructed that never at any time does a gap or opening develop, regardless of how much the cylinder may be worn. This ring is built on the L shape bull ring idea with a small ring completely closing all openings. The master ring, which is end-milled, leaving a solid lug as an integral part, eliminates the possibility of the joints of the sealing ring lining up with the opening in the master ring.

On installing rings in two cycle engines it is necessary to pin the rings into the piston groove to keep the joints from passing over the cylinder ports. With the Double Seal the dowel is placed in the top side of the groove and the opening of the

master ring is placed at the dowel. The lug, which is placed on the equal half of the circumference, makes this ring equally successful in both 2 and 4-cylinder engines.

Cylinder Wear

Another very important point gained through the use of Double Seal piston rings is the reduction of cylinder wear. This is accomplished in three ways:

First, only four Double Seals are used to a piston (replacing the former seven to eight ordinary rings);

Second, the frictional wear caused by rings is reduced 50 per cent because only one-half the number of rings are used per piston;

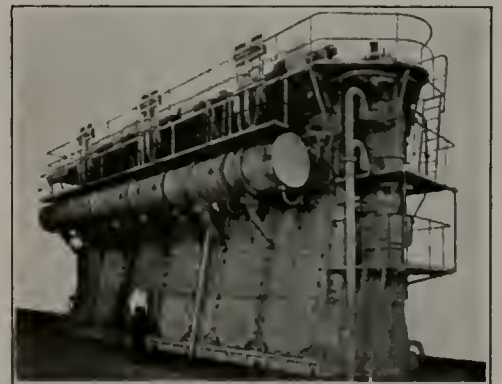
Third, by holding full compression, the lubricating oil is not sprayed off the cylinder and pistons, resulting in better cylinder lubrication.

A careful check upon cylinder wear has recently been made by a prominent diesel operator in one of their 2250 horsepower engines. In a comparative number of running hours it was found that by installing four Double Seal piston rings in place of eight ordinary rings they effected a reduction of approximately 60 per cent of cylinder wear. After such remarkable performance it was not a great problem for them to figure their engine maintenance costs would be greatly reduced by fitting Double Seals in all cylinders of their diesel equipment.

Among diesel engine operators using these rings are the Standard Oil Company (Calif.), the American-Hawaiian Steamship Company, the



Above, the Double Seal diesel type piston ring. At left, the motorship Carriso, satisfied user of Double Seal rings. At right, 3000 brake horsepower Bethlehem 2-cycle marine diesel engine, on which Double Seal piston rings are standard equipment.



Pacific Steamship Company, the Oceanic Steamship Company, and numerous municipalities and power companies operating diesel-electric power plants.

Since diesel operators have obtained such remarkable performance with these rings many prominent diesel manufacturers have adopted and are installing them as their fac-

tory equipment. McIntosh & Seymour-Bethlehem diesels (Union Plant), Pacific-Werkspoor diesels, Mianus diesels, and the Atlas-Imperial diesel engines are among the first to recognize the importance of using Double Seal rings in the assembly of their new engines. As the diesel engine industry is only in its in-

fancy, these manufacturers realize the importance of using the best rings obtainable.

D. D. Cook, distributor, who is located at 1124 Polk Street, San Francisco, reports his problem as: Not the selling of Double Seals, but the filling of orders in keeping with sailing dates.

NEW LONG STROKE PNEUMATIC DRILL

A NEW design of 4 cylinder pneumatic drills has been brought out by the Ingersoll-Rand Company, 11 Broadway, New York City. This new design has been developed to overcome every trouble formerly experienced by the users of pneumatic drills.

A complete line of this type is now available in both reversible and non-reversible sizes. The many new features in these machines, as well as the numerous improvements on old designs, make these new drills an outstanding achievement. One feature alone—the speed governor—will, in approximately a year's time, pay the entire cost of the drill in the amount of air saved. Furthermore, every wearing part is renewable at small expense. The following are some of the important features:

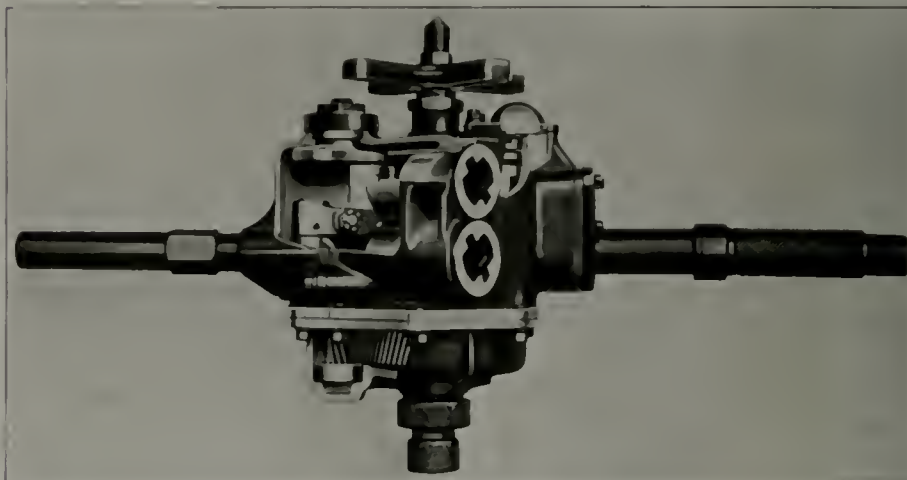
Speed Governor, which limits the speed of a drill after it has passed the point of maximum horsepower and so prevents racing and extra consumption of air; in addition, it avoids the wear and tear on the drill of high free speeds, excessive friction heat, and consequent lubrication troubles.

Cylinder Liners are of special steel fitted into the steel casing and easily removable and renewable. A worn cylinder may be easily renewed at small cost. The cylinder case proper never wears out.

With this construction, in addition, it is practically impossible to dent a cylinder and cause sticking of a piston. A space between the cylinder liner and cylinder case walls prevent this.

The cylinder liners are held in place by cylinder heads which screw into the liner and shoulder against the case. The threads are in the liner and not in the case, so that "stripped thread" would necessitate only a new cylinder liner.

Crank pins are fitted with a sleeve held stationary on the crank pin, so that all the wear takes place on the



New long stroke Ingersoll-Rand pneumatic drill with case partly cut away, showing balanced cranks and helical gears.

sleeve instead of the crank pin. In other words, the wearing of the crank pin is impossible and it is only necessary to renew the worn crank pin sleeve.

Lubrication of the crank pins is from the inside as well as from the outside. All other drills have been lubricated by the crank shaft supposedly turning in the grease in the crank case. However, it has been found that centrifugal force throws the grease away, resulting in very little lubrication. With this new method a combination of the venting of the case with holes drilled through the crank, as in automobile engines, assures proper lubrication of the crank pin bearings.

Main valve is of large diameter with long bearing surfaces. It is air balanced so as to avoid wear on its bushing. It is gear timed so that no intricate valve mechanisms, toggles, levers, or cranks are needed.

Gearing is helical type, giving stronger construction and smoother operation than straight spur teeth. The crank pinion is renewable independently of the crank, so that a damaged pinion does not mean the replacement of a complete crank shaft.

Connecting rods are of one-piece drop frogings. There are no straps, toggles, bolts, or pins to adjust in cramped quarters.

Crank shaft construction permits the use of solid-end connecting rods and renewable crank pin sleeves. It is accurately counterbalanced to insure smooth operation. The complete crank shaft with pistons and connecting rods can be assembled outside of the case and then inserted in place.

Trade Literature

Cory-Recony Valve Control Bulletin. Important among features of the Cory-Recony units described in the new bulletin are: remote control, separate power panel in which all circuits are opened and closed, electric braking permitting seating with full power, easily set limit switch with positive adjustment, position at the control station, and any angle installation.

Cory-Recony Standardized Units are made in sizes to operate remotely valves from 2 to 60 inches under varying pressure and temperature conditions. . . .

NEW TYPE ELECTRIC LIFT TRUCTOR

THE success of the electric lift tractor within buildings has tempted many users to increase the range of this type to more distant points on the premises where runways are in poor condition. In most instances this has required the extension of runways, although some concerns have not given proper values to such improvements. On the other hand, the yards and storage spaces are so extensive that the laying of ideal trucking surfaces would possibly require a prohibitive investment.

The improvement of the trucking tool has kept pace with the encouraging interest taken by the average user in its employment. The Elwell-Parker Electric Company, Cleveland, has developed a heavier unit of the electric lift type especially suited to travel runways not altogether smooth. This haulage unit is of broader gauge than those designed particularly for inside operation. The gauge of front and rear wheels is the same: i. e., 30 inches. They are fitted with 22-inch drive and 15-inch front wheels and with either $3\frac{1}{2}$ or $4\frac{1}{2}$ -inch tread. Drive wheels are fitted with double row ball bearings weighing 13 pounds each and radial and thrust bearings measuring 7 inches in outside diameter.

The wheels are carried on drop forged knuckles with drop forged levers pressed upon tapered serrations, assuring a firm union of the two. These knuckles support the weight of the axle, frame and load on a steel ball bearing recessed in a cup at the upper ends. The levers are fitted with ball ends received in steering rod sockets. All rods are placed high beneath the platform to avoid contact with obstructions on runways. The full floating alloy steel drive shafts are pressed into drop forged clutch plates bolted to outside of drive wheels. These shafts are fitted with chrome-vanadium universal joints and engage the splines of differential.

An innovation in tractor design is found in the all-drop forged differential. The differential carries a special Brown & Sharpe phosphor bronze worm wheel, lock bolted between the two halves of the drop forged differential cage. A multi-thread Brown & Sharpe steel worm on radial and thrust bearings with the above parts of differential, are assembled and adjusted at the bench and the whole dropped into the axle



New type Elwell-Parker electric lift tractor.

differential pot. A new type of universal joint inside brake wheel connects drive worm to motor shaft with demountable armature. Motor is fitted with ball bearings.

Another feature found in this type is the flexibility of the drive unit when traveling over rough surfaces or when platform is loaded unevenly. The tractor platform measures 40 inches in width by 72 inches in length and is formed from a single steel plate with deep side flanges. The platform nose is tapered to aid its insertion beneath a skid even though approached from an angle.

The lift of this platform is $6\frac{1}{2}$ inches or more than that of any other lift type tractor. It is 17 inches high when in lowest position and $23\frac{1}{2}$ inches when raised. The importance of this is evident when considering the following operation and facts:

The underside of skid should clear the top of platform when down by $\frac{1}{2}$ inch when tires are new, as the skid may not be placed on level floor. Then as tires become worn, there being practically one inch of rubber on tires, this clearance will be increased by just that much. Allowing for these conditions, the leg of the skid will clear the floor by from 5 to $5\frac{1}{2}$ inches, which is none too much. The underneath clearances of the tractor between axles is 7 inches, as no lift mechanism or working parts such as lift units or batteries, save the steering rods, are beneath platform.

Clearances are important when

tractor crosses door sills, passes over the crest of an incline, or a wheel drops into a runway depression. The frame on this new type is of the standard commercial angles and channel heavy section type, hot riveted throughout, and offers possibilities for varying platform lengths.

The low set, all-steel battery compartment at one end is fitted with removable end doors and hinged cover to facilitate inspection or quick exchange of Exide or Edison storage batteries.

The wiring is unusual in that the leads between controller and battery are continuous—no splices—to motor brush studs and motor field coils.

The controller is of an entirely new design with reverse drum.

NOVEL SPEED REDUCTION UNIT

IN this device, which is built by the American Engineering Company of Philadelphia, a Hele-Shaw hydraulic pump and Hele-Shaw hydraulic motor are used as a speed reduction unit in place of the usual nest of gears. By utilizing hydraulic pressure, great power and silent smooth operation are combined with flexibility of control. Elimination of friction in a long train of gears gives high mechanical efficiency. Any desired ratio of speed reduction can be had without changing the speed of the direct-connected electric motor. This new device already has been adapted to a wide variety of machine drives, including presses, broaching machines, planers, testing machines, cranes, mechanical stokers, and many uses on shipboard for deck machinery.

SOMETHING NEW IN ANTI-FOULING PAINT

A NEW non-fouling marine paint has recently been perfected by Californians. Long and severe tests have proved it to be barnacle, teredo, and other sea growth proof. Interesting photographs of these tests have been made and seem to prove beyond question that the long sought remedy for foul bottoms has been found. By this medium it is also believed under-water piling can be made safe from the ravages of teredos.

In March, 1924, as a comparative test the two under-water sides of a power boat were covered, one with the new material and the other with the best non-fouling paint on the market. After one year with the boat constantly in service, the photographs show the new material fresh and clean as the day put on. The other side, after a second coat during the period, is shown badly fouled. Various other tests have produced equally favorable results.

Foul bottoms have been the bane of shipping since ships began and entail a tremendous loss. A clean bottom not only relieves the neces-



View of the bottom of motorboat Splatter, starboard side showing condition of non-fouling paint after one year's service in salt water.

sity for frequent drydocking and repainting, but insures greater speed, less fuel, increased sailing radius, and continuous service. The maritime world will hail with delight news of this new development, the apparent solution of an age old problem. Negotiations are under way for its manufacture and sale.

data for steam power plant engineers and operators with an index of 16 pages, assuring ready reference. Superheated steam, its advantages over saturated steam, and the proper design and performance of superheaters are briefly discussed. It illustrates superheater arrangements in practically all stationary, marine, and locomotive type boilers commonly made in America. Waste heat, portable and separately fired superheaters are also shown.

Clear View Screens

CHAS. CORY & SON, INC., 183 Varick Street, New York, has accepted the exclusive manufacturing and selling rights of Kent's Clear View Screens for the United States and Canada.

The merit of Clear View Screens is so completely proved in shipping, railway locomotive, yachts, high-speed power boat, aeroplane, and automobile application that American industry should quickly adopt the Kent as standard operating equipment.

Clear View Screens consist of a polished glass disc rotated on a central bearing by an electric motor at such a speed that rain, spray and snow are instantly dispersed. Complete transparency is maintained in all weather conditions. With equal efficiency the rotation disc throws off its surface a green sea or wet fog.

The complete instrument is supplied in two standard forms. In the first, a mechanical unit, consisting of disc, frame, motor, and motor bracket, is mounted in a polished teak frame, which will take the place of an existing window in the wheel house or wing shelter. A

metal frame hinges inward to allow access to the front of the disc. In the second type, known as the Hood pattern, the mechanical unit is mounted in a hood that revolves upon a metal pedestal. This type is suitable for any exposed position such as an open bridge. Inside the hood there are teak wood elbow-rests, so that the observer may put head and shoulders within the shelter of the hood and use his glasses in comfort, unaffected by the weather. By a movement of his body he can revolve the hood in any direction that he requires to search. The hood has a canvas back to protect the inside when not in use.

Clear View Screens can be furnished with pelorus for determining bearing.

Trade Literature

Superheat Engineering Data—A Handbook on the Generation and Use of Superheated Steam. Sixth edition, revised. (Superseding Data Book for Engineers.) The Superheater Company, New York and Chicago, 1925. Bound in keratol, 4 1/2 x 7 inches; 208 pages, 85 illustrations and diagrams, 69 tables. Price \$1.

This handbook contains condensed

Brief comparative data are given as to sizes, tube sizes, arrangement of tubes, etc., for the stationary water tube boilers illustrated. The steam tables cover pressures from below atmospheric to 600 pounds, absolute, and include properties of superheated steam from 50 to 300 degrees Fahrenheit superheat.

The section on piping includes information for figuring piping for handling water, saturated and superheated steam, and velocity and pressure drop of water and steam flowing through piping. In this section are included also the proposed American standards for high pressures.

Superheat Engineering Data also contains engineering data on coal and oil fired boilers, which includes tables of heat values for gaseous, liquid and solid fuels. Other miscellaneous data include complete conversion tables and data on bolts and screw threads, with the recent work of the American Engineering Standards Committee, and the National Screw Thread Commission. There are also many miscellaneous tables frequently used by steam engineers.

BOOK REVIEWS

The Western Ocean Packets. by Basil Lubbock. 160 pages with 22 illustrations, bound in red buckram with gold stampings; published by Charles E. Lauriat Company, Boston. Price \$3.50 net.

This book is an amplification of a series of articles on Western Ocean Packets, published in *The Nautical Magazine* of Glasgow a few years ago and now compiled into book form. The story of the Western Ocean Packets should be of great interest to every American because it was these famous ships that brought across from Europe the great bulk of the immigrants who, as Mr. Lubbock expresses it, "put meat on the bones" of Brother Johnathan, "filled out his clothes, and added weight to his muscle and breadth to his stature." The great majority of immigrants who came across in the first half of the nineteenth century came in packet ships. Those were the days when the Dreadnaught and many of her companion packets and clippers were so much more comfortable and were making so much better schedules than steamships that a good sailer man was ashamed to say that he had shipped on a steamer.

* * *

The Return of the Cutty Sark, by C. Fox Smith. 56 pages, 8 illustrations, bound in blue cardboard, with red buckram back, and gold stampings; published by Charles E. Lauriat Company, Boston. Price \$1.25 net.

This delightful little volume by C. Fox Smith gives a concise biography of the famous British tea clipper *Cutty Sark*, which vessel shares with some of the great American clippers the glory of being the best known of the world's sailing ships. Certainly it may be said of her that she is the best known sailing ship afloat today.

The *Cutty Sark* was born fifty-five years ago at Dumbarton for old John Willis. She was begun by the good firm of Scott and Linton and finished by the well-known ship-building firm of Denny Bros. She was composite built, her frame being of iron and all of her planking teak, including the deck.

During 1924 Captain Dowman, a retired sailing ship skipper, bought her back from the Portuguese who had been working her as a barkentine. The author of the book, after she had been refitted, helped to

take her around from Falmouth Harbor to be present at the yacht regatta in Fowey Harbor.

To the uninitiated, a single performance of this ship will be enough to show that she deserves honorable mention and considerable fame. In 1875 in running her easting down she did 2163 miles in six days, which is an average of over 15 knots an hour and will be acknowledged to be "some going" for a sailing ship.

* * *

The Art of Rigging, by Capt. George Biddlecombe. 160 pages; bound in green buckram with gold stampings; published by The Marine Research Society of Salem, Mass. Price \$5 net.

This volume forms publication number eight of the Marine Research Society. It is said by experts to be the best manual ever produced on the rigging of sailing ships. Its method is progressive, teaching the beginner to rig, first, the bowsprit, then the lower rigging, then the topmasts up, and so on in correct order. Recovering the gear and bending the sails are described in detail.

The book itself has had a rather interesting progressive method of publication. Its original nucleus is found in "The Elements and Practice of Rigging and Seamanship" by David Steele, London, 1794. Later it was published in four volumes, the third of which was devoted ex-

clusively to the art of rigging, with 11 plates. This work was published at Navigation Warehouse No. 1, Union Row, Minories, Little Tower-Hill, London, 1800. In 1848 Charles Wilson of London decided to issue a new edition of the "Art of Rigging," and entrusted the revision of the work to Captain George Biddlecombe, then a master in the royal navy after many years experience in the merchant service. Mr. Biddlecombe made extensive alterations and additions, increased the number of plates and made new drawings of the old plates.

The present edition of "The Art of Rigging" was compiled by The Marine Research Society from Captain Biddlecombe's own copy, with corrections in the text made in his own handwriting. The Society had the assistance of Captain Ernest H. Pentecost, formerly commander of the Cunarder *Saxonia*, who wrote an introduction to the text. This volume will undoubtedly be of great interest to students of old sailing ships and will form a very valuable reference work for the model builder. To quote the closing line of the introduction, "To the riggers of ship models and others who would learn the seaman's secrets, this book, complete and wonderfully clear, is recommended by an old seafaring man who first went to sea in a ship rigged in the old style with not a fathom of wire rope aboard her."



The old British clipper ship *Cutty Sark* reconditioned and on display at the Fowey Regatta.

MARINE ENGINE OIL

An Analysis of the Composition, Compounding, and Use of Marine Engine Lubricants With Especial Reference to the Practice of the Associated Oil Company

By H. A. SHAWK,
Lubrication Engineer, Associated Oil Company

BY the term, marine engine oil, we generally mean the oil which we employ to lubricate the crossheads, pins, guides, eccentric straps, horseshoe thrust, spring bearing caps, etc., such as are found in the reciprocating steam engines. The ordinary term of marine engine oil does not cover oils used on marine steam turbines crankcase engines, dynamo bearings, steam cylinders, etc. The term marine engine oil also covers various types of brands of oil used for the same purpose, viz., compounded and straight mineral.

Marine engineers understand the term marine engine oil to mean a compounded engine oil which produces an emulsion in the presence of water. Straight mineral oil is also used as a lubricant by many engineers owing to its low first cost.

The object in compounding hydro-carbon or mineral oils with animal or vegetable fats is to impart to the lubricant the emulsifying properties above referred to. Emulsification is a valuable asset to oils used for lubricating marine steam engines because it adds greatly to its adhesive qualities or its ability to cling tenaciously to bearing surfaces and it successfully resists the washing effect of water, salt or fresh, hot or cold. The compound also acts as an indicator or gauge of excessive or dangerous bearing temperatures.

All marine engineers will tell you that when the surfaces of the slides present a smooth cream colored appearance and the combs are evenly distributing the emulsified oil over the frictional surface that everything is going nicely and that it is not necessary to "feel" the slides to determine their operating temperature. When dark spots begin to appear, trouble is near and the engineer's immediate attention is demanded. The same thing holds good in "feeling" pins and main bearings. When cream-like lather is picked up by the fingers and feels smooth to the touch and of a soapy nature, your bearings are running all right and within a few degrees of the surrounding atmospheric temperature.

Compound marine engine oil is added to the body of water in the horseshoe thrust block and this floated on the surface of the water imparts lubrication to the disks which revolve in it. The oil and water are soon emulsified and produce a smooth, free-flowing lubricant, which is practically a semi fluid grease and provides the best kind of lubrication for this type of equipment.

In filling oil reservoirs on the top-side grating for gravity feed to reciprocating parts of the engine, care must be exercised not to allow water to find entrance, as this would emulsify the oil in the reservoir and would rob the supply of its capillary attraction, which is absolutely necessary when wick feeds are employed. Also emulsified engine oil will not feed or flow through long or small size brass piping ordinarily used aboard ship and will cause the oil to back up in the reservoir, which will gradually fill up and overflow and little or no oil will be delivered through the pipes to the point of consumption, which will soon result in overheated frictional surfaces and trouble.

Most marine engineers instruct their oilers to give the oil some on top and bottom ends of connecting rods, links, eccentric gear, etc., a lot of fresh water when hand oiling on journals half turn round. This produces in the bearing small emulsion previously referred to and same will be forced working out of the main journals and on the side of connecting rod bearings. The addition of water makes a compound that greatly reduces the consumption of lubricant.

Compound marine engine oil is employed in eccentric gears on the sides of the valves for the combs to dip into,

and for general lubrication as outlined above and wherever water conditions present themselves.

The compound used in the different brands of oil varies in quantity and in character. In some cases No. 1 lard is used; in others Neat's Foot oil. Some manufacturers employ peanut oil and other cheaper substitutes as a compound. The recognized standard for compounding a marine engine oil and a compound which is always specified by the U. S. government is blown rape seed oil.

Rape seed oil or rape oil is obtained by pressing the rape seed. Rape seed is raised principally in India, Russia, and the West Indies. Rape seed is a black seed frequently found in bird seed and is used as a fat producing agent. The oil when first obtained is a dark brown color and is contaminated with slime. After it has been refined and treated, the oil presents a pale lemon colored appearance and is of light viscosity.

To prepare rape seed for marine engine oil, the rape oil is heated to around 200 degrees Fahrenheit and blown with a large volume of air at a low pressure for many hours, which rapidly oxidizes the product causing it to darken in color and increase in viscosity. After ninety hours of treating as referred to above, the oil has reached the point where the viscosity is around 1200 seconds at 210 degrees Fahrenheit and the color has changed to a dark bright red. Blown rape oil is added to the marine engine oils at the refinery of the Associated Oil Company to produce special marine oils under the Avon brand.

AVON TROPDEX MARINE ENGINE OIL is a compounded marine engine oil especially made for use in tropical areas where atmospheric temperatures are very high and where an oil of high viscosity is demanded. Tropdex is compounded with the very best quality of blown rape seed oil, which is especially treated in our own refinery. Tropdex marine engine oil has a viscosity of approximately 1050 seconds at 100 degrees Fahrenheit and 67 seconds at 210 degrees Fahrenheit.

AVON MARDEX MARINE ENGINE OIL is a compounded marine engine oil conforming to U. S. Navy specifications for the lubrication of reciprocating steam engines. Mardex has a viscosity of approximately 725 seconds at 100 degrees Fahrenheit and 65 seconds at 210 degrees Fahrenheit. The best quality of blown rape seed oil, especially treated at our own refinery, is added to produce a marine engine oil of the very highest quality and one which will meet the test of any government.

Pour out a few drops of Mardex marine engine oil in the palm of the hand, add a little water and by mixing same with the finger, a rich creamy tenacious lather will be produced which cannot be washed off with water. This will demonstrate its ability to cling to the bearing surfaces of the engine.

AVON NEPDEX MARINE ENGINE OIL is manufactured along the same lines as Mardex except that less blown rape seed oil is added, which reduces the cost of the oil somewhat. Nepdex has a viscosity of approximately 675 seconds at 100 degrees Fahrenheit and 60 seconds at 210 degrees Fahrenheit.

AVON AQUADEX MARINE ENGINE OIL is manufactured to meet competitive price conditions and a little less blown rape seed is added than Nepdex contains. The viscosity of Aquadex marine engine oil is approximately 665 seconds at 100 degrees Fahrenheit and 55 seconds at 210 degrees Fahrenheit. Aquadex is a popular brand of oil and gives good results under all conditions, but has not the emulsifying properties of the Mardex.

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

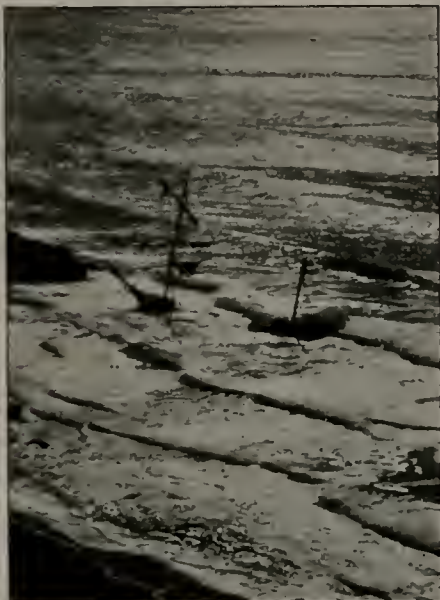
By CHARLES F. HOWELL, Contributing Editor

MANY people are wondering, these days of earthquakes, whether there is an angle of marine insurance that might bring that branch of underwriting into the market for protection against this grave hazard. Scarcely. Ever since the great Japanese earthquake of September 1, 1923, pressure has been more or less constant upon marine insurers for a broadening of their field of activity to include this risk, but without any effect worth mentioning. The slight concession to this demand that occurs to my mind is the inclusion by an occasional underwriter of the risk of "collapse and/or subsidence of docks."

The Santa Barbara earthquake scarcely affected marine insurers at all. This was largely because there was very little shipping, outside of oil, at that port. As a matter of fact, the liability of marine underwriters for shore damage, during the currency of the policy, is limited to fire, flood, collision, and derailment while the insured merchandise is on a railroad; also to fire and flood on docks and elsewhere on shore.

An exception to the above-mentioned disinclination to assume earthquake hazards by marine insurers should be noted. Many "transportation floaters" specifically provide protection against loss or damage from this source. It may be explained that a transportation or transit floater is a blanket policy used to cover local shipments made by merchants where it would be impracticable to make specific reports of the individual items. Railroad people frequently employ this form of coverage to protect shipments moving over their lines.

Goods in warehouses are under fire insurance policies, after they have been delivered from the steam-



After a storm on the California Coast.
Photo by Clinton E. Worden.

THE MALOLO FIRE

Complete survey by representatives of the underwriters and classification societies of the recent fire at the yards of Wm. Cramp & Sons Ship & Engine Building Company, which caused damage to the new passenger steamer Malolo, there being constructed for the Hawaiian service of the Matson Navigation Company, shows that the damage is very much less than at first estimated and will probably not exceed \$53,000.

The fire was probably caused by a hot rivet being dropped into the wooden ways and blocks, from which the fire started about three-quarters of an hour after the 2500 workmen, engaged in constructing the vessel, had knocked off work for the day. The wooden blocking, ways, and scaffolding around the forward part of the ship for a distance of approximately one-third of her length were destroyed or damaged. All of the vessel's steel work in place at the time (which consisted only of bottom shell plating, double bottom floors and some tank top plating) which in any way came in contact with the flames or was at all heated by the conflagration is being entirely renewed. As the vessel was only about 3 per cent completed at the time and as the midship section and after end of the vessel constitute the more difficult work in fabrication and steel erection, it is expected that the renewal of the forward section will not in any way delay the ultimate completion of the vessel, and every effort is being made by the builders to effect this result. In view of the complete renewal of all material which could possibly be affected, the completed vessel will not have any relationship to the fire which occurred.

ers; and those fire insurance policies that are on the Standard Form do not include the earthquake hazard.

Covering China Shipments

The continued serious civil disturbances in China have had their reactions upon the underwriters. There is a considerable shore risk at prominent Chinese ports, and American and other shippers have wisely been seeking to insure that hazard. The rates began low enough to suit anybody, but, as the riots and outbreaks of strikers grew more frequent and at more numerous points, they have been steadily mounting. New York marine insurers met and talked the situation over, appointing a committee to advise from day to day as to what minimum rates should be quoted. The normal rate is from 2½ cents per \$100 of value to 5 cents per \$100 of value. It is now much higher.

London has the greatest marine insurance market in the world, and as it insures a multitude of shipments to China the present peril to goods on docks in Shanghai, Canton, Hongkong, Tientsin, etc., becomes a matter of great importance. The London rates have, in consequence, been raised right along, as the disturbances grew. The angle of the underwriter will be appreciated when it is remembered that he covers merchandise not only while on the ocean steamer, but for a period of fifteen days after it has been landed. If the period after discharge of the cargo is thirty days, then the rate is increased 1 per cent for the additional fifteen days. London is issuing only one-month policies. There have been numerous shipping strikes in China of late, and these have upset sailing schedules badly.

Writing Vessels "Overdue"

There is a form of insurance which has been written for many

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years at London Lloyd's, but almost never in the United States. It appears that these risks are not offered here. I refer to overdue vessels. In the underwriting room at London Lloyd's there is a special department, small but adventuresome, where long "sporting chances" are regularly taken on total losses on any vessel that is overdue at its port of destination but which is not definitely known to be actually lost. When a ship is three or four days overdue, there is often much anxiety over it on the part of interested underwriters, and they stroll over to the "overdue" department and pay a premium to have the risk, or a part of it, taken off their hands. As more days pass without the vessel arriving at her destination or being spoken by passing ships, the rate for the risk goes proportionately up. In time the vessel becomes practically uninsurable. At last she is posted as missing, and then nobody wants to insure her. It is interesting, in this connection, to note that not everybody is allowed to post a boat as "missing"—they might have the wrong sort of a reason for doing so. It has to be done at the request of a party legally interested. As soon as a vessel is posted "missing" all policies on her or her cargo become payable as total losses.

A few days ago an unusual occurrence took place at London Lloyd's in this matter of "overdue" insurance. The sailing ship *Marguerite Melinos* left Nantes for Brazil on February 17. Eleven days later she was spoken off the southern coast of Ireland, and that was the last heard of her for three months. Of course, she had long been given up for lost and her underwriters had paid almost her entire value out to the "overdue" market to get rid of the risk. On May 25 she sailed serenely into her Brazilian port of destination. The gamblers who took the long chance cashed in a small

fortune. It was then discovered that she had been drifting around in the doldrums, not having been able to get out of that catchpole of the Equator. Such an experience was almost unprecedented.

Secure the Hatches

It is considered highly important by the underwriters that every security be given to hatchways and other deck openings, especially with coal-carrying vessels. This matter has been taken up very seriously by the British Board of Trade, and they have issued explicit instructions to their surveyors on the subject. They direct that every precaution be taken to see that hatch covers and their supports are in good condition, that the beams and fore and afters have supports of sufficient width, and that the hatch covers have a bearing surface at least two inches in width. Where hatch sections already fitted in existing ships provide a width of bearing surface approximately satisfying these conditions, there is no occasion for a surveyor to raise objection if the sections are satisfactory in other respects. At least two good tarpaulins should be provided for each weather deck hatchway, as also satisfactory means for effectively battering them down. After the tarpaulins have been battened down, each section of the hatch should be secured independently by rope lashings. At least six spare hatch covers should always be carried, for use in emergencies.

Such are the strenuous tips passed out to British surveyors, and it would not be surprising if this example were soon followed on this side of the water. Underwriters have paid too many claims as a consequence of improperly secured weather deck openings to continue to sit passively by and let ship operators neglect such important precautions.

Coke on Deck

The old, experienced underwriters of Europe keep right up to the times. Very often the American insurer gets important leads from them. Thus, from Norway comes word of a carefully discussed program relative to advisable methods for the protection of coke on deck. They believe in having it packed in sacks; and they favor the use of steel wire netting to prevent its being washed overboard. They argue that the netting should be applied only vertically, as it would impair the stability of the ship were it used to such an extent as to perfectly secure the load. They say that good supporting posts should be used at intervals of about three feet, and boards should be fixed along the deckload, protecting the intervening spaces between each pair of posts at moderate heights. It is not believed that this arrangement would be more expensive than the exclusive use of boards, as the wire netting could be rolled up after use and employed several times.

Bumper Cargo of Onions

What is believed to have been the largest cargo of Egyptian onions ever received in this country arrived at Boston, some time since, by the Shipping Board steamer *Blair*, operated by the American Export Line, from Alexandria. There were 65,900 bags of the vegetable. The total weight was 7,380,800 pounds. The value was \$885,696. This shipment was written in the New York market, free of particular average, at 62½¢ per \$100 of value. Early summer is a suitable time for shipment of this class of cargo, because it is then possible to secure better ventilation in holds than in winter.

The term "particular average" is one of the most generally used in the whole language of the marine underwriter. Partial losses run up more bills on the insurers than any

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other source of claims. A particular average is a loss borne wholly by the party upon whose property it takes place. It should be distinguished from the total loss of a part which may occur when a shipment consists of various units. For example, it is a loss which destroys less than the total value of the interest insured. But it may often attain such a percentage of the total value involved that the insured shipper may "abandon" to his underwriters under what is known as a "constructive total loss"—that is, the property may not have actually become a total loss, but may have been so injured that the part remaining is impossible of repair or restoration at a cost less than the value of the whole.

When insured property is "abandoned" to the underwriters the latter usually take assignment of it on payment of the total loss. When abandonment has once been made and accepted it is irrevocable without the consent of the underwriters. No time should be wasted in making such a tender of abandonment, as promptness is one of the essentials of the arrangement.

Extra Risks

On excellent authority it is stated that the habit of throwing in all sorts of extra risks resulted last year in 78 per cent of marine losses paid by underwriters. Only 22 per cent was from actual perils of the sea.

Refrigeration

During the last year or so there has been a decided extension of the use of refrigeration in the shipping of meats, fruits, and vegetables, and it is clear that a fine trade of this kind can be had if steamship lines will get into this market. At present, most of it is done by British and Continental lines; largely because the United States is self-supporting, while the Old World has to draw upon remote countries for such

supplies. The San Francisco Chamber of Commerce has recognized this demand and is inaugurating a movement toward the extension of Pacific Coast refrigeration trade with South America and the enlisting of the good offices of the Argentine government in securing return cargoes of frozen meats from Buenos Aires to Panama.

In the United States, refrigeration shipments are largely of fruit, in particular apples from the Pacific Northwest. Several steamship lines are announcing an enlargement of their capacity for this purpose. Certain far-seeing lines have ships exclusively devoted to refrigeration space, with a capacity running as high as nearly 500,000 cubic feet. These modern carriers can maintain a precise degree of constant cold with surprising exactness. For example, apples are given from 33 to 35 degrees; a variation of this scale may result in either decay or freezing. These vessels carry their cargoes to Europe by way of the Panama Canal.

The only chance that Eastern underwriters get at the insurance of fruit shipments from the Pacific Northwest is when the rail service is used to New York and thence transshipped to steamers for the United Kingdom or other Continental points. From Portland or Seattle the rate is about 80 cents; from New York on, about 45 cents.

London gets the lion's share of refrigeration transport insurance, writing it at a rate somewhat higher than that of ordinary cargo. It is covered free-of-particular average "all risks," at about three quarters per cent. The great danger is in the breaking down of the refrigeration machinery, when, of course, a total loss of the cargo would be imminent. In order to cover this hazard, use is made of what is known as the "breakage of machinery"

clause in the policies. It is a most hazardous undertaking for the insurer, particularly because of the length of the voyages.

Dressed meats are shipped either chilled or frozen. The former are kept at a temperature of 40 degrees; but the latter are frozen solid before shipment and thereafter kept at a temperature of approximately 28 degrees. If any mishap befalls the refrigeration arrangements, frozen meats will spoil much more rapidly than the chilled. Beef is usually shipped chilled, while mutton, poultry, rabbits, and other small pieces go frozen.

As illustrating the careful consideration given this subject by underwriters, it may be stated that the London Institute has no fewer than twenty clauses applying to this trade.

Gasoline Hazards

The fatal explosion on the oil barge Salvager at Staten Island, a few weeks ago, caused by a seaman carrying a lighted torch into the vessel's boiler room, gave occasion for underwriters to enlarge upon the great hazards attendant upon the handling of gasoline. In that instance, more than 4000 gallons of this material were ignited. The wreck of the barge was complete.

It is urged that free ventilation be provided in compartments where gasoline is stowed or is being loaded in bulk. This is because fumes, at such times, have an opportunity to penetrate other compartments of the vessel. The extreme inflammability of gasoline is, naturally, the cause of the dangers incurred in handling it. Such a mistake in judgment as the ordering of a seaman below with a lighted torch where large quantities of gasoline are stored does not relieve the underwriters, however, in case they have written the policy on a form which included explosion.

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Freights and Charters

July 21, 1925.

SINCE our last report, dated June 18, the new crop grain market has been quiet, but chartering for Sept.-Oct.-Nov. should start within the next three weeks with rates from 32/6 to 35/-. The lines at present are booking barley at 35/- and with the expected large general cargo movement for Aug.-Sept., should not have to take less.

The following fixtures have been reported for grain to the United Kingdom-Continent: British stmr. Benalder, terms private, July loading, Kerr, Gifford & Co.; British stmr. Ethelfreda, 31/3, Sept., same charterers; British stmr. Glenardle, 32/6, Aug., Strauss & Co.; British stmr. Trevalgan, 29/6, same charterers; British stmr. Grinton, 30/-, Oct.-Nov., charterers not mentioned; a stmr., 30/-, Sept., Kerr, Gifford & Co.; British stmr. Baron Cowdor, Wilmer Grain Co., rate not mentioned; British stmr. Mabriton, Oct.-Nov., Wm. H. Pymm, Jr., rate not mentioned.

The Australian lumber market remains about the same, with charterers' ideas at \$13.25 to \$13.75 for Aug.-Sept., and the following fixtures have been reported: Norwegian m.s. Neptunia (new), \$13.75, Sept., J. J. Moore & Co., Inc.; Japanese stmr. Oregon Maru, \$14.25, July-Aug., same charterers; Norwegian stmr. August, \$14.25, charterers not mentioned; American bktn. E. R. Sterling, \$14, prompt loading, Douglas Fir Exploitation & Export Co.; British stmr. Knockfierna, Sept.-Oct., Pacific Export Lumber Co., rate not mentioned, and Japanese stmr. Yojin Maru, Sept.-Oct. loading, same charterers, rate not mentioned.

The Japanese lumber market has shown an increased demand and space is being booked at \$8.50 to \$9, with wheat to Japan paying \$4.75 per ton of 2000 pounds. Japanese stmr. Kashu Maru is reported fixed with lumber from Columbia River, Aug. loading, charterers not mentioned.

The intercoastal market from the American side is at \$15 and from the British Columbia side \$14. The following fixtures are reported: British stmr. City of Victoria, \$14, July-Aug.; American stmr. Commercial

Trader, July loading, rate not mentioned, Chas. B. McCormick Co.; Japanese stmr. Norfolk Maru, \$14, Southern Alberta Lumber & Supply Co.; American stmr. El Abeto, \$15, July, Dant & Russell; American stmr. J. R. Gordon, rate not mentioned, Aug. loading, Wallem & Co.; Norwegian stmr. Dagfred, lumber and zinc concentrates, Sept. Oct., rate and charterers not mentioned; Japanese stmr. Etna Maru, \$14, Aug. Southern Alberta Lumber & Supply Co.

The following time chartered steamers are reported: British stmr. Gretaston, delivery Hampton Roads, option two round trips, 85 cents, Southern Alberta Lumber & Supply Co.; British stmr. Norman Monarch, North Pacific to North of Hatteras, two round trips, 85 cents, charterers not mentioned; British stmr. Heathfield, delivery Hull, re-delivery Alexander, 3/3, lumber, H. R. Mac-Millan Export Lumber Co.

The following steamers are reported sold: American stmr. Pensacola, U. S. government to Learner & Rosenthal, Oakland; British stmr. Tatjana, \$300,000 reported, Pacific Salvage Co. to Norwegian parties; American stmrs. Corinto and San Juan, Pacific Mail Steamship Co. to Panama Mail Steamship Co.; American stmrs. Lake Onowa, Lake Gilpen and Lake Gitano, U. S. Shipping Board to Dollar Steamship Line; American schrs. Indiana, Bohemia and Llewellyn J. Morse, Alaska Packers Assn. to Jos. Markowitz, to be dismantled; British tank stmr. Montrolite, Edward P. Farley & Co. to Standard Oil Co. of Calif. (flag changed to American); British m.s. Arran Firth, purchased by Frank Waterhouse & Co.; American ship Daylight, The Chas. Nelson Co. to Jas. Griffiths & Sons, Seattle; American stmr. Rosalie Mahoney, Fred Linderman to Border Line Transportation Co., British Columbia.

The following tanker fixtures have been reported: American tanker Crampton Anderson, California to North of Hatteras, 84 cents, early July; American tanker Joseph M. Cudahy, San Pedro to New York, 85 cents, clean, late July.

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AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

A NOTABLE RECONDITIONING

THE Morse Dry Dock & Repair Company, Brooklyn, recently contracted with the New York & Cuba Mail Steamship Company to recondition and transform their two freight and passenger steamers *Orizaba* and *Siboney* into first-class modern passenger and freight vessels.

The two steamers are sister ships, built by Wm. Cramp & Sons Ship & Engine Building Company in 1918. They are 443 feet 6 inches over-all length and measure 7582 gross tonnage and 4248 net tonnage.

The *Orizaba* was reconditioned first. On this ship the splendid equipment of the Morse Dry Dock & Repair Company enabled them to show wonderful dispatch, delivering the vessel several days before the contract time of 75 days had expired. The *Siboney* was entered at the contractor's yard eight days before the delivery of the *Orizaba*, presenting the very unusual sight of two sister ships being reconditioned at the same time in one ship repair yard.

The vessels, as now fitted, will accommodate comfortably 204 first cabin passengers and 100 third class passengers. Ample and luxurious public rooms and conveniences are fitted for passengers in each class.

Shipping Board Conversion Progress

PROGRESS on the building of the main diesel engines and auxiliary engines for the fourteen Shipping Board steamers to be converted to motorships continues satisfactorily, and the Department of Maintenance and Repair of the Emergency Fleet Corporation, located at 45 Broadway, New York, is now preparing specifications for the installations of the engines in the vessels and bids will be received for this work well in advance of the time of delivery of the first engine.

Among recent awards of contracts for auxiliary equipment for these motorships are the following:

For electrical equipment for deck auxiliaries contract was awarded as follows:

Shunt brakes for 14 ships' equipment to Cutler-Hammer Company, Milwaukee, on a bid of \$34,535.59.

Motors and controls for 14 ships' equipment to Westinghouse Electric & Manufacturing Company, on a bid of \$188,722.



New dining saloon on the steamship *Orizaba*.

As will be noted from the illustration, a rather unique type of architectural effect is used in the dining salon. This room has a capacity of 196 at a single seating. Vehisote with mahogany trim is featured in the paneling. Litosilo deck covering is largely used throughout. Beclawat windows are fitted, making a spacious enclosed promenade. The galley equipment is new throughout and modern in every detail.

For the furnishing of cargo and warping winches, contract was awarded to the Lidgerwood Manufacturing Company, New York, on a bid of \$795 each for 140 cargo winches and \$1129 each for 14 warping winches.

For starting air tanks contracts were awarded as follows:

Four 550-cubic feet capacity tanks to Moore Dry Dock Company, Oakland, Calif., on a bid of \$2138 each.

Fourteen 550-cubic feet tanks to Newport News Shipbuilding & Drydock Company on a bid of \$1850 for the first tank and \$1675 for the additional thirteen.

Eight 635-cubic feet tanks to New York Shipbuilding Corporation on a bid of \$1900 each.

For electric cable as per specifications contract was awarded to the Standard Underground Cable Company, Pittsburgh, Pa., on a bid of \$17,297.10.

Bids have been received and contracts will shortly be awarded for

pumps, including lubricating oil, fuel oil transfer, combined lubricating oil and salt water cooling, salt water cooling, fresh water cooling, fire and bilge, engine room bilge, sanitary, ballast and fresh water pumps.

Work in Prospect

Albert W. Lawson, 1 Drumm Street, San Francisco, has been preparing plans and specifications for a new coastwise vessel for passenger and freight service. The vessel is to be 248 feet long, 40 feet beam, 16 feet loaded draft, 12 knots speed, and capacity of 1200 tons of cargo. Accommodations will be provided for from 50 to 60 passengers, including the usual public rooms found on a coastwise vessel of this class. The type of propulsion machinery has not yet been decided and they have under consideration either single screw, triple expansion engines and Scotch marine boilers; twin screw, triple expansion engine and Scotch boilers; single or twin screw diesel engines. The vessel is to have two decks forward and one deck aft.

These same architects will shortly call for bids for stock cruisers for Allen Knight, yacht broker of San Francisco. Bids will be asked on several different sizes. All the cruisers are to have compromise stern, engine under cockpit or pilot house with controls for operating engine and steering at the cockpit or pilot house. Speed to be from 10 to 13 miles. Type of engines will be chosen by the purchaser or will be Ker-

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math type, which is the choice of Allen Knight. Dimensions of the different sizes are:

First, 30 feet long by 9 feet beam, speed 10 miles, sleeping accommodations for 4 people.

Second, 36 feet long by 9 feet 6 inches; 10 miles speed; accommodations for 4.

Third, 45 ft. long by 11 ft. beam; accommodations for 8 people.

Fourth, 54 ft. long by 11 ft. beam; accommodations for 8 people.

Fifth, 54 ft. 10 in. long by 13 ft. beam; accommodations for 10 people.

International Mercantile Marine Company, New York, are considering the construction of two or three

**IN
PACIFIC COAST
SHIPYARDS****SHIP REPAIRING
SHIP BUILDING
RECONDITIONING
ENGINE REPAIRS**

new vessels for the intercoastal service of the Panama-Pacific Line.

It is reported that the Clyde-Mallory Line and the Eastern Steamship Company are planning the joint construction of two passenger vessels. Theodore E. Ferris, naval architect of New York, has been working on plans for such vessels for the Eastern Steamship Company for some time.

The Port of Portland, Commission of Public Docks, is planning the construction of three fast fireboats for the Portland waterfront. The plans are just in the early stages, as a bond issue to provide funds for their construction could not be voted upon until next May.

Bids will shortly be asked by Port of Portland Commission for installation of fire fighting apparatus for the steamer Portland, two diesel dredge tenders, and one gas tender.

Recent Contracts

Bethlehem Shipbuilding Corporation, Ltd., Union Plant, San Francisco, has an order for a diesel-electric bay and river tank barge for the General Petroleum Co. The vessel will have single screw, will be 176 feet 6 inches over-all, 32 feet beam, 11 feet 6 inches loaded draft, 14 feet molded depth, 9 knots speed, and will have a capacity of 6000 barrels of oil. Two 250 brake horsepower Atlas-Imperial diesel engines will be connected to Westinghouse generators. The price bid by Bethlehem was \$202,497.

Dravo Contracting Co., Pittsburgh, has order for towboat hull for Army Engineers, Rock Island; they have also started construction of two steel derrick boat hulls and ten barges for stock.

Federal Shipbuilding & Dry Dock Co., Kearny, N. J., has contract for two freighters for the United States

Steel Corp. They will be 250 feet between perpendiculars, 42 feet 9 inches beam, and will have a deadweight tonnage of 4100. One vessel will have direct diesel drive and Worthington diesel engine of 950 shaft horsepower. The other will have diesel-electric propulsion, Nelseco diesel engines of 750 brake horsepower.

Midland Barge Company, Midland, Pa., has an order for two steel barges for the Standard Sand & Gravel Co., Wheeling, W. Va.; two steel barges for the Barrett Line, Cincinnati; one steel wharfboat for the city of Baton Rouge, La.; and one steel barge for the Army Engineers at Montgomery, Ala.

Chas. Ward Engineering Works, Charleston, W. Va., has an order for a sternwheel towboat for the Ohio River Co., to be equipped with reciprocating steam engines of 700 indicated horsepower.

Keel-layings

Fireboat for Los Angeles Harbor by Los Angeles Shipbuilding & Drydock Corp., June 26.

Two tugs for J. W. Sullivan Co. by Bethlehem Shipbuilding Corp., Harlan Plant, June 28 and 29; carfloat for the D. L. & W. R. R. June 1.

Towboat for Kelly Transportation Co. by Chas. Ward Engineering Works, Charleston, W. Va., June 17.

Launchings

Mystic, yacht, for Irving Eldredge by Bath Iron Works, June 22; Diamond W. for Chas. E. F. McCann, June 27.

Robert J. Kernan, bulk freighter, for Geo. Hall Coal & Shipping Corp., Montreal, by Collingwood Shipbuilding Co., Collingwood, Ontario, July 6.

Henry Bruckner, ferryboat, for City of New York by Staten Island Shipbuilding Co., June 27.

WM. CORNFOT, President

GEO. RODGERS, Sec'y-Treas.

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IN ATLANTIC COAST SHIPYARDS

**SHIP REPAIRING
SHIP BUILDING
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ENGINE REPAIRS**

Deliveries

Beryl E., cannery tender, for Sunny Point Packing Co., Seattle, by J. C. Johnson's Shipyard, Port Blakely, Wn., June 10; barge to Drummond Lighterage Co., July 3.

Cygnnet, yacht, for Paul Hammond by Bath Iron Works, Ltd., June 20; Seven Seas, yacht, for Van S. Merle-Smith, June 17.

Walter B. Reynolds, bulk freighter, for Geo. Hall Coal & Shipping Corp. by Collingwood Shipbuilding Co., June 18.

Cherokee, combination steamer, for Clyde Steamship Co. by Newport News Shipbuilding & Drydock Co., June, 1925; Norfolk, dredge hull, for Atlantic Gulf & Pacific Co., June, 1925.

Dredge hull for United Dredging Co. by New York Shipbuilding Corp., June, 1925.

Colorado, towboat, for International Petroleum Co., Toronto, by Sun Shipbuilding Co., June 13; A. D. B. 1, derrick barge, for Andian National Corp., Ltd., June 13.

NEWS OF AND FOR THE SHIPBUILDERS

The Coast Guard Service, Washington, D. C., have received bids for two 6-cylinder, 4-cycle diesel engines of 600 brake horsepower each, to drive direct current electric generators and exciters, for installation in the Coast Guard cutter New Bear, as follows:

Worthington Pump & Machinery Co.	\$71,610
Fulton Iron Works.....	73,465
Bessemer Gas Engine Co.....	75,221
Lombard Governor Co.....	76,800
McIntosh & Seymour Corp.....	78,000
Pacific Diesel Engine Co.....	78,900
New London Ship & Eng. Co.	97,270

Bids were also opened for two 6-cylinder, 4-cycle, diesel engines of 90 brake horsepower each to drive generators to supply current to auxiliaries, as follows:

Bessemer Gas Engine Co.....	\$12,123
Bessemer Gas Engine Co.....	16,927
The Winton Engine Co.....	16,990
McIntosh & Seymour Corp.....	17,600
Union Gas Engine Co.....	17,720
Atlas-Imperial Engine Co.....	20,000

Awards of contracts will be announced shortly.

* * *

The Golden Gate Ferry Co., San

Francisco, has received a franchise from the City of Berkeley to construct and maintain a wharf and operate ferry service between Berkeley and San Francisco. Ferryboats for this service will probably be contracted for after a similar franchise is received from the City of San Francisco. The Golden Gate Ferry Co. operates the diesel-electric ferries Golden West and Golden Gate.

* * *

The Wilmington Transportation Company, Wilmington, California, is reported to be contemplating the construction of two diesel-electric tugs of about 500 horsepower to be used in towing rock barges from the quarries on Catalina Island to the mainland. William Muller, Wilmington, who builds and repairs practically all the vessels for the Wrigley interests, will probably be the builder of the tugs. William Muller has just completed a 1200-ton capacity barge 136 feet long and 39 feet beam for this company.

* * *

The customhouse launch Robert N. was recently launched for the Oregon District Collector of Customs. The launch was built by W. H. & E. Von der Werth, Portland. She is 44.8 feet long, 10.6 feet beam, and 4 feet depth. Her engines are Hall-Scott gasoline type of 200 horsepower, which are guaranteed to develop 24 miles an hour. Accommodations are provided for five persons. The launch will be used at the mouth of the Columbia River and is built for service outside as well as inside the mouth of the river.

* * *

At the annual convention of the Benevolent and Protective Order of Elks, held at Portland July 14-16, the society decided to undertake the raising of a fund of \$500,000 for the restoration of the historic American navy frigate Constitution, better known as Old Ironsides.

* * *

Wm. J. Brady, part owner of the Eureka Boiler Works, San Francisco, has been appointed port superintendent of the Dollar Steamship Lines, with headquarters at San Francisco.

(Continued on Page 392)

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The Corrugated Ship



THE arrival of the corrugated steamer Newton Ash at the Moore Dry Dock Company, Oakland, for drydocking and overhaul, aroused considerable curiosity on the Pacific Coast concerning this type of ship. The Newton Ash was designed by the Monitor Shipping Corporation, Newcastle-on-Tyne, who have designed a number of ships of this type.

Corrugated ships may be described as having two bulges or corrugations along each side of the vessel between the ordinary load line and the upper part of the bilge. These corrugations gradually merge into the fore end at the turn of the bows, so that from a point near the fore end of the fore hold to the stem, the vessel has the usual form of bow lines. Similarly, at the after end they merge into the usual stern form and are so arranged that they effect a reduced eddy and admit of a solid flow of water to the propeller. These corrugations form two rather flat arcs, whose breadth add approximately six per cent to the breadth of a plain sided ship.

At the bows of cargo vessels of bluff design, a bow wave is apparent, sometimes even extending a little in front of the vessel, which is raised by the power of the main engines propelling the vessel forward. The wave alters the trim of the vessel at the speed she is then traveling. Now, if this can be reduced, it is so much power saved for propulsive purposes. By the application of corrugations to the sides of the vessel, that wave can be reduced in height. By reducing that height, mechanical energy and power are saved, with the consequent reduction of fuel consumption.

At the after end of the vessel a somewhat similar wave is apparent

at the rudder and propeller. This forms a drag or suction, thereby also serving to retard the vessel's progress. The corrugations greatly lessen this wave formation and give a smoother surface to the water.

It has been demonstrated on all corrugated ships that the propeller (apparent) slip is only about one-half of that experienced in the usual plain sided ships. Greater efficiency in steering is also claimed for the corrugated ship, with consequent savings of power and wear and tear of steering gear.

The reason why a ship has practically no tendency to roll is that the corrugations shoulder the waves alongside in a vertical direction, whereas the action in a plain sided ship is to waste energy by pushing them away horizontally, square to the vessel's side.

The Monitor Shipping Corp. recently designed three vessels for London owners, all of which are now running and giving every satisfaction. These vessels, Rio Azul, Rio Blanco, and Rio Claro, each carry 7400 tons deadweight and have averaged throughout their voyages 10 knots per hour on a coal consumption of 24 tons per day for all purposes. Recently, owing to the increased cost of bunker coal, the owners have run these vessels at 200 miles per day on a daily coal consumption of 14 tons for all purposes.

The table reproduced here shows the greater efficiency and consequent savings in fuel consumption, demonstrated on one voyage of the Rio Blanco as compared with a plain ship of corresponding dimensions and power.

FLETTNER RUDDER INSTALLATION

(Continued from Page 370)

engines going full speed ahead. This difficult maneuver proved beyond all doubt the superior steering ability of the Flettner rudder.

Special attention was given to the test involving steering at slow speed and with the engines stopped. With the tide coming into the Hamburg basin, that is going with the stream and with the wind against her, the ship would maintain her steering with the engines stopped for at least seven minutes; in other words, the rudder responded at the very slowest speed.

Entering Hamburg harbor at slow speed, the vessel was brought directly to the pier without any aid from tugboat whatever, which fact indicates the absolutely superior maneuvering ability of this device. The Flettner rudder drive worked very satisfactorily and made a reliable impression.

CORRUGATED VESSEL "RIO BLANCO,"

Compared with PLAIN VESSEL of same size, on actual sea-going results

	Plain Ship.	Corrugated "Rio Blanco."	
Deadweight	7192	7202	10 tons more
Loaded draft	24.4	24.3	1 inch less draft
Distance in miles	6184	7437	1253 extra miles
Days steaming	32 days 6 hours	30 days 6 hours	4 days
Knots per hour average	8.0	8.5	1/4 knot more per hour
Coal consumption per day	25 tons	14 tons	11 tons less per day
Coal consumption per ton	80 tons	512 tons	294 tons less
Total D.W. 1 ton total	80	141	52 more
Voyage from Hamburg to London by the Rio Blanco on 1st of August 1910 on 1st of August 1910 on 1st of August 1910			
Two days later on 3rd of August 1910 on 3rd of August 1910			
General efficiency of Corrugated vessel compared with Plain vessel of same size	874-400 150 407	115	BETTER THAN PLAIN SHIP.



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Boiler room of the S. S. City of Los Angeles. This liner has an installation of eight B & W boilers.

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The Shipping Board opened bids on July 16 for 200 of the Board vessels for scrapping purposes. Henry Ford bid \$1,706,000 for the 200. The Boston Iron & Metal Company, Baltimore, Md., had previously bid \$1,370,000 for the 200. A. G. Wilson, Bar Harbor, Maine, representing the Ocean Power Company, Inc., submitted a bid of \$2,444,000, but it was disqualified because not accompanied by a certified check for one-tenth the amount of bid. Bids for varying numbers of the Shipping Board vessels were submitted by 25 other firms. Henry Ford stated in his proposal that he intended to scrap most of the vessels but would convert a certain number of them to diesel engine propulsion.

* * *

The Lake Union Dry Dock & Machine Works, Seattle, have purchased a floating drydock from the Hefferman Dry Dock Company, West Seattle, and have towed it to their plant on Lake Union, Seattle. The drydock is 343 feet over-all, 79 feet 6 inches wide, and has a lifting capacity of 3500 tons.

* * *

Preparatory to the work of building Submarine V-6 at the Mare Island Navy Yard the following appointments have been made: Captain B. T. Bulmer will have charge of the new industrial department, which includes the machinery, hull, and public works divisions. His assistants will be: Inside superintendent, Cmdr. C. S. McDowell; outside superintendent, Cmdr. C. W. Fisher; shop superintendent, Cmdr. E. D. Almy; plant superintendent, Cmdr. C. A. Carlson.

CYTHEREA

(Continued from Page 365)

the Cytherea, it is an electrically operated winch for handling the shore lines and either of the two anchors. Below the forward deck are spacious quarters for the crew, and in the pilot house, which is equipped with Kelvin and Wilfred O. White nautical instruments, is everything necessary for navigation either shorewise or abroad.

The boat is also equipped with wireless sending and receiving set. For the convenience of those going ashore she carries a power tender driven by a 4 horsepower gasoline engine.



Two photographs showing progress of work on the hull of the steamship Malolo, building at Wm. Cramp & Sons, Philadelphia, for the Matson Navigation Company.

Progress of Construction

Pacific Coast

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

Beryl E., cannery tender, Sunny Point Packing Co., Seattle; 86 length by 19 beam; 165 HP Atlas Imperial diesel eng; keel Apr2/25; launched Mar25 25; delivered June 10 25.
Barge, 100x36 feet; Drummond Lithering Co.; keel May25 25; delivered July3 25.
Barge, same as above, for stock; keel June 8 25.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION San Pedro, Calif.

Purchasing Agent: L. A. Hanson.
No name, hull 47, straight stem and elliptical stern, one deck, fireboat, for Los Angeles Fire Department; 93 ft 4 in LBP; 19 ft beam; 6 ft 6 in loaded draft; 17 mi speed; 900 SHP Winton gas engs; keel June26 25; launch Sept19/25, est; deliver Oct1 25, est.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 HP; two WT express type boilers; 10,000 tons disp; keel April 21 deliver April 26, est.

ROBERTSON'S SHIPYARD Alameda, Calif.

No name, towboat, San Francisco Bridge Co.; 50 LBP; 15 beam; 5 draft; 100 HP Union diesel eng; keel May4 25; deliver July1, 25, est.
Barge, 60x26x6 ft; keel Apr27/25.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
One towboat, Carnegie Steel Co.; 170x39x6 ft; deliver July25, est.

Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.

Four barges, U. S. Engineers; 80x26x5.

Three barges, for Patton Tully; 160x34x7 ft; deliver Nov25, est.

Two barges for the Standard Oil Co. (La.); 275x32x9, deliver Sept 25, est.

Thirty barges for the Ohio River Co.; 175x26x11, deliver Nov25, est.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.

The Federal Shipbuilding & Dry-Dock Corporation has been awarded the contract for construction of the diesel-electric seagoing hopper dredge Willets Point, on a bid of \$541,700. The dredge is to be 200 feet 2 1/4 inches over-all, 41 feet beam, 19 feet 6 inches depth. The government will supply two Winton diesel engines and some additional equipment.

* * *

The Department of Plant and Structures of the City of New York recently appropriated \$1,101,500 for the construction of a ferry steamer 264 feet long and for three smaller ferry steamers.

* * *

The City of Boston is also planning the construction of two steam ferryboats to be 174 feet long.

No name, hull 790, self-unloading stone carrier, Bradley Transportation Co.; 566 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Burke.
Cygnat, hull 103, schooner yacht, for Paul Hammond; 58 LOA; 12 beam; 7-6 draft; Scripps eng; keel Feb 25; launched June17/25; delivered June20, 25.

Seven Seas, hull 104, schooner yacht, for Van S. Merle-Smith, same as above; keel Feb23/25; launched June8 25; delivered June 17/25.

Mystic, hull 105, schooner yacht, for Irving Eldredge, same as above; keel April5/25; launched June22 25.

Diamond W., hull 106, schooner yacht, for Chas. E. F. McCann, same as above; keel Mar 14 25; launched June27/25.

Nokomis, hull 107, schooner yacht, for Wm. A. W. Stewart; 58 LOA; 12 beam; 7-6 draft; Kermath eng; keel Mar16 25; launch July6/25, est; deliver July 8/25, est.

Venturer, hull 108, schooner yacht, for Harold Wesson, same as above; keel Mar18/25 launch July14, est.

Ahyee, hull 109, schooner yacht, for Dave H. Morris, same as above; keel Mar20/25; launch July14, est.

Nancy, hull 110, schooner yacht, for G. M. Hecksher; 58 LOA; 12 beam; 7-6 draft; keel Apr8/25; launch Aug5 25, est.

Seafarer, hull 111, schooner yacht, for Parker Corning; 58 LOA; 12 beam; 7-6 draft; Kermath eng; keel Apr21 21/25; delivered Aug7/25, est.

Charmian, hull 112, schooner yacht, for Newcomb Carlton; 58 LOA; 12 beam; 7-6 draft; keel Apr23 25; launch Aug12/25, est.

Shearwater, hull 112, schooner yacht, for F. L. Cricker; 58 LOA; 12 beam; 7-6 draft; Scripps eng; keel Apr27/25; launch Aug12 25, est.

Calliope, hull 114, schooner yacht, for Julius Fleishman, same as above; keel May1 25; launch Aug12 25, est.

Vo-Ho, hull 115, express cruiser, W. E. D. Stokes, Jr.; 50 ft over-all; 10 ft beam; 3 ft draft; keel May5 25; launch Aug15/25, est.

Helena II, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 HP each; keel Jan20 25; launch and deliver Aug1 25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmington, Del.

Hull 3496, tug, J. W. Sullivan Co., hull only; 93 ft 6 in LBP; 25 ft beam; 9 loaded draft; keel June28/25.

Hull 3497, same as above; keel June29/25.

Hull 3498, earfloat, D. L. & W. R. K.; 326 LBP; 40 beam; 5 loaded draft; keel May18/25.

Hull 3499, sister to above; keel June1/25.

No name, hull 3500, fireboat for the City of Houston, Texas; 117-6 LBP; 27 beam; 8-6 loaded draft; twin screw; diesel-electric drive; 14 mi speed; two 500 HP Winton 4-cycle diesel engs; Westinghouse generators.

CHARLESTON DRY DOCK & MA- CHINERY COMPANY Charleston, S. C.

Purchasing Agent: Charles R. Valk.
Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 LBP; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 HS; keel Nov/24; launched Feb24/25; deliver Oct/25, est.

Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 LBP; 33 beam; 2 ft 11 in loaded draft; 1 Scotch boiler, 11 ft 6 in by 12 ft 3 in; keel Feb25/25; launch May/25, est; deliver Dec/25, est.

COLLINGWOOD SHIPBUILD- ING CO.

Collingwood, Ontario

Purchasing Agent: E. Podmore.

Walter B. Reynolds, hull No. 75, bulk frgr., Geo. Hall Coal & Shipping Co., Montreal; 252 LBP; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface, condensing; 700 IHP 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Feb2/25; delivered June18/25.

Robert J. Kernan, hull No. 76, bulk freighter, sister to above; keel Feb5/25; launched July6/25; deliver July16/25, est.

CONSOLIDATED SHIPBUILDING CORPORATION

Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 180-HP Winton diesel engs.

Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.

Hull 2797, cruiser for R. F. Hoyt, 81 ft long; 2 Wright & Typhone engs, 500 HP each.

Hull 2798, cruiser for H. C. Stutz, 65 ft long; 2 180-HP Speedways.

Hull 2799, cruiser for Elliott & Co., 44 ft long; 180-IHP Speedway.

Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150-IHP Speedways.

Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300-HP Speedways.

Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300-IHP Speedways.

Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO. Philadelphia, Pa.

Purchasing Agent: Ed. C. Geehr.

Malolo, hull 509, express psgr and frt liner, Matson Navigation Co.; 582 LOA; 577 length at water line; 83 ft beam; depth molded to C deck 54 ft; displacement 22,050 tons; 8250 DW T; speed 22 knots regular, 23 knots maximum; 25,000 shaft horsepower; Cramp-Parsons turbines; oil burning B&W water-tube boilers; keel May 4/25.

Hulls 510-17, 8 steel screws, City of Philadelphia; 500 cu yds capacity; deliver Oct/25, est.

DEFOE BOAT & MOTOR WORKS Bay City, Mich.

Purchasing Agent: G. O. Williams.

Northerner, hull No. 79, wooden cruiser, E. F. Cooley-Lansing; 42 ft 10 in long; 10 ft beam; 3 ft draft; 12 mi speed; Scripps E-6 gas engs; keel Feb1/25; launch June20/25, est; deliver July 1/25, est.

Hull No. 80, steel vessel, U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 210 DWT; 300 IHP; diesel engs; keel Feb28/25; launched Apr30/25; deliver July10/25, est.

Hull No. 81, sister to above; keel Feb28/25; launch June15/25, est.

Hull No. 82, sister to above; keel Mar11/25; launch June20/25, est.

Hull No. 83, sister to above; keel Mar12/25; launch June10/25, est.

Hull No. 84, sister to above; keel Mar21/25; launch June10/25, est.

Hull No. 85, sister to above; keel Apr1/25; launch June 10/25, est.

Hull No. 86, sister to above; keel Apr10/25; launch June10/25, est.

Hull No. 87, sister to above; keel Apr18/25; launch June25/25, est.

Hull No. 88, sister to above; keel May5/25; launch June25/25, est.

Hull No. 89, sister to above; keel June15/25, est.

est; launch June25/25, est.

Hull 90, steel patrol boat for U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 12 mi speed; 210 DWT; 300 IHP; diesel engs.

Hull 91, sister to above.

Hull 92, sister to above.

DRAVO CONTRACTING COMPANY Pittsburgh, Pa.

Hulls 373-375, inc, 3 steel barges for Mississippi River Commission, Memphis; 120 ft by 30 ft by 7 ft 6 in; 430 gro tons each.

Hulls 391-396, 6 sand and gravel barges for Keystone Sand & Supply Co.; 135x27x8; 320 gro tons ea.

Hulls 403-404, inc., 2 steel barges, for stock, 100x26x6-6; 135 gro tons ea.

Hull 405, diesel engine towboat, Stewart Sand Co., Kansas City; 120 IHP; 25 tons.

Hull 406, diesel engine towboat for stock, same as above.

Hulls 413-414, two steel derrick boat hulls for stock; 40 ft x 48 ft x 5 ft 6 in; 100 gro tons each.

Hulls 415-424, inc, 10 barges for stock; 110 ft x 26 ft x 6 ft 6 in; 270 gro tons each.

Hull 429, towboat hull, for U. S. Engineers, Rock Island; 129 ft x 30 ft x 5 ft 2 in.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY Kearny, N. J.

Purchasing Agent: R. S. Page.

No name, hull 83, freighter, U. S. Steel Corp.; 250 LBP; 42 ft 9 in beam; 20 loaded draft; 2100 DWT; Worthington engs, 950 SHP.

No name, hull 84, diesel-electric freighter, U. S. Steel Corp.; 250 LBP; 42-9 beam; 20 loaded draft; 2100 DWT; 750 BHP Nelsco engs.

GREAT LAKES ENGINEERING WORKS

River Rouge, Mich.

Purchasing Agent: Chas. Short.

Wm. G. Mather, hull 250, freighter, Cleveland Cliffs S. S. Co., Cleveland; 618 LOA; 592 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Feb10/25; launched May23/25; deliver July25/25, est.

No name, hull 251, bulk freighter, Columbia S. S. Co., Cleveland; 618 LOA; 492 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12½ mi speed; keel Apr7/25; launch Aug1/25, est; deliver Oct1/25, est.

(Continued on Page 45, Adv. Sec.)

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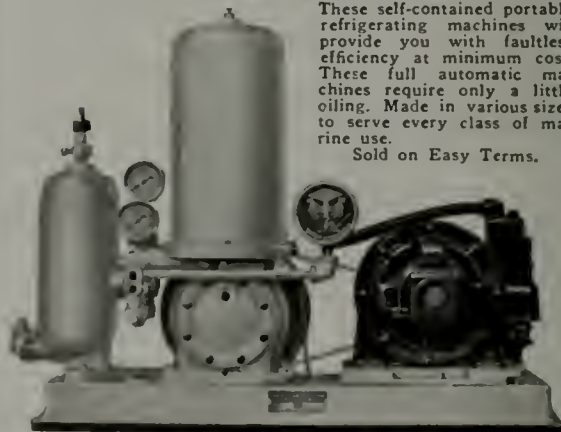
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PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

NEW S. F.-SOUND FREIGHT LINE

H. R. James and W. E. Springstun, Seattle, recently visited San Francisco and announced the inauguration of a weekly freight service by the North Pacific Steamship Line between San Francisco and Puget Sound points. Mr. James is vice-president and general manager of the service. Mr. Springstun, widely known in freight circles of the Northwest, is to be general freight agent at Seattle. William Gissler, Jr., has been appointed general freight agent at San Francisco, with headquarters at Pier 23. The company for the present will render weekly service, planning semi-weekly sailings as soon as arrangements can be made.

H. F. ALEXANDER WINTER SERVICE

The steamship H. F. Alexander, operated by the Admiral Line in the Pacific coastwise trade, and which has formerly been laid up during the winter season, is scheduled to leave Seattle on September 29 for the Atlantic Coast. The crack passenger liner will go into service between New York and Miami for the winter season's heavy travel between the North Atlantic Coast and Florida. An excursion trip to the East Coast is being planned for the H. F. Alexander, the vessel to call at all the principal Pacific Coast ports and Havana.

NORTON LILLY STAFF CHANGES

W. J. Edwards, Pacific Coast manager of Norton, Lilly & Company, recently announced several changes in personnel. George Danz of Seattle has been appointed Northern representative, having charge of all ports north of San Francisco; J. P. Gribbin, resident manager at Portland, has been transferred to San Francisco as assistant to R. G. Sullivan in charge of Pacific Coast operations; Everett W. Morgan from the Seattle office succeeds Mr. Cribbin at Portland; George Eggers, operating manager at Seattle, has been transferred to Portland in a similar capacity.

BRIDGEPORT BRASS ANNOUNCEMENT

A. D. Guion, publicity manager, Bridgeport Brass Company, advises that E. F. Keating Company, 452 Water street, New York, have been appointed to sell Plumrite brass pipe in the metropolitan district. The Keating company was established in 1885 and has a large sales force covering the five boroughs of New York City, as well as Long Island, Northern New Jersey, and all of New York state. They have a plant at Hartford for the fabrication of piping and tubing of iron, steel, brass, and copper. This new company is known as the E. F. Keating Pipe Bending & Supply Company. As this company makes and sells coils, bends, heaters, and pipe pressure power plant piping, hot water service heaters, and numerous other kindred accessories, the Bridgeport Brass Company feels they are fortunate in securing the Keating organization as agents for Plumrite brass pipe.

SPEAR TAKES NEW POST

Charles Spear, president of the State Board of Harbor Commissioners in San Francisco, has been named general manager of Los Angeles harbor. The position is created by the new city charter and carries a salary of \$12,000 a year. Mr. Spear is to resign his state position immediately and will be ready to assume his duties at Los Angeles harbor within sixty days.

L. A. HARBOR ORGANIZATION

On July 1 a new city charter at Los Angeles necessitated the reappointment of a harbor board of five. Following is the personnel of the new board: Walter B. Allen, president of the Board of Harbor Commissioners; Frank Meline (holdover member from the old board), O. M. Souden, former Judge Robert M. Clarke, and Clinton E. Bureg. The new board immediately appointed Charles H. Spear, president of the Board of State Harbor Commissioners at San Francisco, as general manager of the harbor. The engineering, legal, and other departments of the board are unchanged.

AMERICAN-HAWAIIAN SPEEDS UP SERVICE

With the dispatch of the freighter Kentuckan from Boston for the Pacific Coast on July 22, the American-Hawaiian Steamship Company launched its new five-day service between Boston, Philadelphia, New York and Los Angeles, San Francisco, Oakland and Alameda, as well as a ten-day (terminal) service between Boston, Philadelphia, New York and Seattle, Tacoma, Portland, and Astoria via the California ports named above. Charleston will be served eastbound (except from Portland) and westbound via transshipment at New York every twenty days. In twenty-five years the American-Hawaiian fleet has grown from four vessels to twenty-four steamers and two motorships. The line recently purchased six cargo steamers from W. R. Grace & Company.

GENERAL ELECTRIC RETIRING BONDS

The General Electric Company, according to an announcement of its president, Gerard Swope, will retire on September 1 the entire outstanding issue of its 5% gold debenture bonds of 1912, due September 1, 1952, and amounting to \$15,136,500, at 107½% of the principal amount of such bonds and accrued interest.

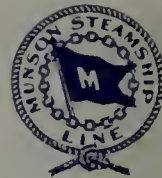
INTERNATIONAL GENERAL ELECTRIC

Announcement has been made by the International General Electric Company that Clark H. Minor, former vice-president of the company, has been elected president to succeed Anson W. Burchard, who had been both president and chairman of the board. Mr. Burchard will continue as chairman, but asked that he be relieved of some of the duties of his double position. Mr. Minor has just returned from Europe, and Mr. Burchard has left for there. Loren Emery, former assistant merchandising manager of the International General Electric Company, has been made general merchandising manager of the company. R. G. Henderson, former manager, has been detailed for special promotion work.



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J. R. Fitzgerald, agent.
215 Market street. Phone Douglas 9560.
C. L. Gibb, assistant agent.
Tribune Tower, Oakland. Phone Oakland 1022.

FREIGHT ONLY

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT.

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Regular sailings between San Francisco, Seattle, Vancouver, B. C., Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

GARLAND STEAMSHIP CORP.

260 California St. Phone Garfield 4700.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Garfield 5000.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland,

Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

2 Pine Street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

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310 Sansome St. Phone Garfield 6760.
285 Bacon Bldg., Oakland. Phone Lakeside 3580.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
F. C. Bennett, Pacific Coast manager.
110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.
Mutual Life Bldg. Phone Eliot 8120.

FREIGHT ONLY.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

PRESCOTT TRACTORS

SUMNER K. PRESCOTT, president of The Sumner K. Prescott Company, Seattle, announces the appointment of the firm of Hough & Egbert, 518 Robert Dollar Building, 311 California street, San Francisco, as sales representatives in the San Francisco district for the Prescott worm-drive industrial tractor. Specialized for the handling of general cargo at steamship terminals, the Prescott industrial tractor is proving important in obtaining the highest degree of economy and efficiency. This new Pacific Coast produce—gasoline worm drive model industrial tractor—has already been adopted by many important shipping firms. A fleet of twenty-one Prescotts are in use by the Luckenbach Steamship Company on the Luckenbach terminals at San Francisco, Portland, and Seattle. The McCormick Steamship Company have adopted them for their new dock at Portland and also at their Seattle terminals. Other important steamship operators using them are the Pacific Steamship Company, Matson Navigation Company, Dodwell & Company, Ames Terminal Company, East Waterway Dock & Warehouse Company, J. C. Hayden Dock Company, Port Commission Docks at Seattle, Tacoma, Portland, and other active Pacific Coast shipping points.

DOLLAR OFFICES HAWAII-ITALY

Stanley W. Good is manager of the Dollar Steamship Line office recently opened at Honolulu. He was formerly Hawaiian agent for the Pacific Mail organization. R. E. Richards has been appointed general agent for the Dollar services at Genoa. J. N. MacGowan continues as European passenger agent, with headquarters at the Genoa branch office. A Naples office is to open soon. The Dollar Steamship Line was previously represented in Hawaii by the Inter-Island Steam Navigation Company.



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GARLAND STEAMSHIP CORP.

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SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

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Norton, Lilly & Company, general agents.
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SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

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PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4 Central. Phone Elliott 6383.
SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Office, 619 Second Ave.
Freight and Operating Office:
Pacific Steamship Company.

L. C. Smith Building. Phone Elliott 2068.
SAILINGS—Intercoastal.
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SAILINGS—Intercoastal.
Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.
Arctic Club Building.
FREIGHT ONLY.
SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

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Williams Steamship Company, Inc.
Spokane street terminal. Phone Elliott 6657.
FREIGHT ONLY.
SAILINGS—Intercoastal.
Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

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SAILINGS—Intercoastal Service.
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611 Spring Arcade Bldg. Phone Van Dyke 0792.
FREIGHT ONLY.

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ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.
208 West Eighth street. Phone Main 808.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
Lane Mortgage Bldg. Phone Metropolitan 6140.
FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
703 Transportation Bldg. Phone Vandyke 4659.
FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.
Freight Offices: 108 West Sixth street.
SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Norfolk, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company.

SAILING SHIPS BOUGHT FOR SCRAP

Three of the oldest ships in Pacific waters passed to the hands of a new owner the other day; their fate, junking. The three vessels are the Indiana, Bohemia, and Llewellyn J. Morse, for many years active in the Alaska Packers' fleet. Joseph Markowitz bought them for their metal. The trio used to run between London, New York, and San Francisco. In later years they joined the packers at the Alaskan fishing banks. When the old timers were in offshore trade they were commanded by some of the most famous sailing ship skippers in the world.

INSPECTS COAST DEVELOPMENT

J. M. Franklin, general manager at New York for the Argonaut Steamship Company, recently visited San Francisco en route from the Northwest to New York. Mr. Franklin is the son of P. A. S. Franklin, president of the International Mercantile Marine.

TRANSMARINE LINE L. A. BERTHS

The Transmarine Corporation is now located at Berths 159-160, Los Angeles harbor, sharing the berth with Struthers & Barry.

WILLIAM J. BRADY DOLLAR SUPERINTENDENT

William J. Brady, president of the Eureka Boiler Works, San Francisco, has been appointed superintendent of the Dollar Steamship Company; Captain L. H. Westdahl, former port captain, has been named assistant superintendent, both having their headquarters at San Francisco.

DANIEL G. COOKE RETURNS TO S. F.

Daniel G. Cooke, formerly with the General Steamship Corporation and the Williams Line, is now associated with the Los Angeles Dispatch Line as district freight agent at San Francisco.

HYDROGRAPHIC OFFICE FOR L. A.

The Navy Department has indicated their intention to establish a branch hydrographic office at Los Angeles Harbor. The hydrographic office is maintained by the Navy Department for the improvement of safe navigation to war vessels and the merchant marine and to provide accurate nautical charts, sailing directions, manuals, etc., for all vessels and marine agencies.

LOS ANGELES

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F. A. Hooper, agent.
Transportation Bldg. Phone 821-336.
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Fast Service to New York via Panama Canal and Havana

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From New York, Pier 61, N. River

MONGOLIA	July 30
FINLAND	Aug. 13
MANCHURIA	Sept. 3
MONGOLIA	Sept. 17

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.

MANCHURIA	Aug. 8	Aug. 10
MONGOLIA	Aug. 22	Aug. 24
FINLAND	Sept. 5	Sept. 7
MANCHURIA	Sept. 26	Sept. 28

Direct connections at New York and thru Bills of lading issued via: American Line to HAMBURG, Red Star Line to ANTWERP.
Atlantic Transport Line to LONDON. White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

PANAMA PACIFIC LINE

INTERNATIONAL MERCANTILE MARINE COMPANY

Passenger Offices:

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619 Second Ave.

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Telephone: Sutter 3414

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322 Citizens National Bank.
Passenger Offices: 510 So. Spring st. Phone TR 6408.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
A. G. Bartlett Bldg. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
Railway Exchange Bldg. Phone Broadway 2744.
SAILINGS—Weekly from Seattle, Tacoma, Portland, Astoria, Oakland, San Francisco, Los Angeles to New York, Philadelphia and Boston.

SAILINGS—Every 21 days from Portland, Astoria, Seattle, Tacoma, Oakland, San Francisco, Los Angeles to Charleston.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
1008 Spalding Bldg. Phone Broadway 2503.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.
Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Montreal. Through bills of lading from other Pacific Coast ports.

DOLLAR STEAMSHIP LINE

Canadian Robert Dollar Co., Ltd.
402 Pender street, West. Phone Seymour 8680.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between Vancouver, B. C., Seattle, San Francisco, Los Angeles, New York, Boston, Baltimore, Philadelphia, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.
Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.
413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports, San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports, Panama Canal. Call at Oakland westbound.

FATHOMETER PROGRESSING

H. J. W. Fay, vice-president of the Submarine Signal Corporation of Boston, widely known authority on aides to navigation, reports that the Fathometer, one of his company's latest devices for safety in soundings, is attracting far-reaching attention in every class of ship operation. The Fathometer bids to early achieve recognition as an indispensable part of every ship's equipment. P. A. Richards, with offices in San Francisco, is the San Francisco manager for the Submarine Signal Corporation, known throughout the Pacific Coast range as a navigation expert.

ASSOCIATED OIL DISTRIBUTION

Increasing distribution facilities on the Pacific Coast from the Canadian to Mexican borders, the Associated Oil Company has new plants well under way at Everett and Bellingham. In addition to the terminal at Seattle Associated now has distributing depots in full operation at Tacoma, Olympia, Longview, Yakima, Wenatchee, Mt. Vernon, Centralia, Chehalis, and Aberdeen. The Seattle terminal represents an initial investment of \$1,500,000. The bulk storage capacity is 15,000,000 gallons. The Associated Oil Company's tanker fleet comprises twenty-two modern vessels. The refinery at Avon, California, is one of the most modern and largest in the United States. The daily refining capacity is 60,000 barrels. In addition to the Avon plant Associated has refineries at Amarco and Gabioto, California.

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ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transhipment at Hull.

SOCIÉTÉ GÉNÉRALE DE TRANSPORTS MARITIMES A VAPEUR (Pacific-Mediterranean Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

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112 Market street, Phone Sutter 7640.

FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street, Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Weekly from San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.
Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila).

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street, Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels.)
Sudden & Christenson, agents.
230 California street, Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning direct to Portland.

OSAKA SHOSEN KAISHA

Williams, Dimond & Co., Agents.
310 Sansome St. Phone Sutter 7400.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
549-51 Market street, Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Every two weeks between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.
403 Alaska Commercial Bldg. Phone Gar. 3899.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.
City ticket office: 1300 Fourth Ave.
General offices: 1519 R. R. Ave. So.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Stuart Building, Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.
Central Building, Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
American Bank Building, Phone Elliott 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building, Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

Pier 6.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building, Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building, Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building, Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.
Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.
(Operating U. S. S. B. vessels.)
701-62 Transportation Bldg. Phone Tucker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yokohama, Kobe, Osaka and Nagoya.

RECORD JOB FOR SMITH-RICE

Smith-Rice Company, San Francisco, achieved a notable piece of work in raising the barge Big V, which was sunk recently while working alongside the submerged oil tanker Alden Anderson at Avon. The Smith-Rice derrick barge No. 2 was dispatched to the scene shortly after the dredge had sunk and three hours following arrival alongside the sunken barge the craft had been pumped out and was en route to Oakland in the slings of the derrick barge. The Big V was taken to the Crowley Shipyards on the Estuary for repair. Shipping experts were enthusiastic in praise of the thorough manner and remarkable dispatch which attended this latest important work of the Smith-Rice organization.

FRENCH LINE OFFICIAL HOME

Captain B. Aillet, Pacific Coast representative for the French Line, recently returned to his San Francisco headquarters from New York, where he attended a conference with the Paris officials of the service.

FOSTER EQUIPMENT S. F. DISTRICT

Berry E. Dunn & Company, Bal-four Building, San Francisco, has been appointed representatives of the marine department of the Power Specialty Company and the Foster Marine Boiler Corporation. A complete supply of spares for Foster superheaters, Foster economizers, and Foster boilers will be carried in stock by Berry E. Dunn & Company.

SEATTLE EXPERT OPENS OFFICES

Arthur W. Kinney, widely known throughout the Pacific Northwest territory, has completed the organization of the A. W. Kinney Company, Inc., and has opened offices in the Henry Building, Seattle. This new firm will serve as steamship agents, brokers, and freight forwarders. Mr. Kinney is to specialize as an agency for offshore lines, and announcement of his connections is expected soon. He is familiar with conditions of trade with the Orient, Australia, South America, United Kingdom, and Europe through previous active service with important lines over these routes. Mr. Kinney in the past held important positions with the American-Hawaiian Steamship Company and A. M. Gillespie, Inc.

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hama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone Broadway 7900 and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Weekly from Los Angeles and San Francisco to Honolulu, Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco, and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick & McPherson, Agents.
Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—At frequent intervals from Los Angeles to Yokohama, Kobe, Shanghai, Hongkong and other Oriental ports.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

PORTLAND

MITSUMI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
702 Porter Bldg. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)
Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning direct to Portland.

PORTLAND-ORIENT LINE

Wallem & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TATSUUMA KISEN KAISHA

Walker, Ross, Inc., General Agents.
Yeaton-Coates Co., Agents.

Board of Trade Bldg. Phone Broadway 7574.

FREIGHT ONLY.

SAILINGS—Monthly between Portland and Kobe, Osaka, Yokohama, Nagoya, as inducements offer.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

812 Spalding Bldg. Phone Broadway 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

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Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

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Yamashita Company.

1109 Porter Building.

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SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

PANAMA MAIL NEW QUARTERS

W. A. Young, Jr., general passenger agent of the Panama Mail Line, opened attractive new offices at No. 2 Pine street, San Francisco, on July 27. Prior to the date the Panama Mail affairs were handled in the old Pacific Mail location at 503 California street. The Panama Mail's new quarters are especially convenient in location and are modern in every detail.

FURNESS FLEET ADDING TONNAGE

Upon arrival recently at Halifax, H. C. Blackiston, United States director of Furness, Withy & Company, stated that the line has placed a contract for another vessel. Mr. Blackiston made the run to Halifax aboard the new Furness liner Newfoundland.

JOHNSON LINER SOON READY

W. R. Grace & Company, general agents on the Pacific Coast for the Johnson Line, announces that the new motorship Axel Johnson will sail from San Francisco about October 20 direct for Gothenburg. It will be the maiden voyage of the new liner. She is building at a European yard and is scheduled to depart for the Pacific Coast in August. Among the features of the Axel Johnson are ultra-modern accommodations for thirty first-class and thirty-two third-class passengers.

MATSON OFFICIAL REPORTS ON MALOLO

A. C. Diericx, assistant general manager of the Matson Navigation Company, returned to the offices in San Francisco recently after a vacation trip East. He visited the Cramp yards at Philadelphia, where the gigantic express liner Malolo (Flying Fish) is under construction. Mr. Diericx reports the job rapidly advancing.

GARLAND LINE APPOINTMENT

E. N. Tormey, formerly general agent of the Los Angeles Dispatch Line at Los Angeles, has been appointed manager of the Garland Steamship corporation's office at Los Angeles, with offices in the Spring Arcade Building.

SWAYNE & HOYT, INC.

Carl Robison, cashier of Swayne & Hoyt, Inc., at Seattle, has been appointed general agent of the company at Portland, and the office has been moved to 408 Board of Trade Building.

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.

Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp, Rotterdam.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

433 California street. Phone Sutter 6717.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports, direct to Hamburg, Hull, Copenhagen.



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 EXPRESS FREIGHT AND PASSENGER SERVICE
PACIFIC COAST PORTS
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UNITED KINGDOM AND CONTINENT
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 WITHY & CO., Ltd.
FURNESS (PACIFIC), LTD.

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EXPRESS FREIGHT AND PASSENGER SERVICE TO AND FROM

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UNITED KINGDOM--CONTINENTAL EUROPE

hagen, with trans-shipment to all Scandinavian and Baltic ports.
ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
 230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Monthly between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
 General Steamship Corporation, sub-agents.
 240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
 Fortnightly from Vancouver and Los Angeles to United Kingdom.

FURNESS LINE

Furness, Withy & Company, Ltd.
 Furness (Pacific), Ltd.

710 Balfour Building. Phone Sutter 6478-6479.
PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
 Fortnightly from Vancouver and Los Angeles to United Kingdom and Continent.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
 351 California street. Phone Sutter 6427.
FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, general agents.
 260 California street. Phone Douglas 8040-1-2.
FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Co., general agents.
 332 Pine street. Phone Sutter 3700.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.
 240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Mediterranean Service. Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)

120 Market street. Phone Douglas 7510.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.

FREIGHT ONLY.

SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.

230 California street. Phone Garfield 2846.

For passengers, Phone Sutter 46.

PASSENGERS AND FREIGHT.

SAILINGS—North Pacific-European Service.

Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

SEATTLE

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.

Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

823 Alaska Building. Phone Elliott 9104.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Monthly between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)

General Steamship Corporation, agents.

Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)

Furness (Pacific), Ltd.

Burchard & Fiskien, Inc., agents.

705 Arctic Building.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.

Fortnightly from Vancouver and Los Angeles to United Kingdom.

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.

SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.

Dexter-Horton Bldg. Phone Elliott 1464.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service. Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Company.

Hoge Building. Phone Elliott 5412.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.

Colman Bldg. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Mediterranean Service.

Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)

204-206 Rainier Building. Phone Elliott 4944.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

DOLLAR HEADS TOUR EAST

Making a tour of inspection, three officials of the Dollar Steamship Line, arrived in New York on July 22. The trio comprises William J. Brady, marine superintendent, Hugh Mackenzie, passenger traffic manager, and M. J. Buckley, assistant freight traffic manager. They will return to the home offices in San Francisco about mid-August.

MITSUMI FREIGHT MANAGER CHANGED

J. Nakanishi, newly appointed general freight department manager on the Pacific Coast for Mitsui & Company, recently arrived in San Francisco, proceeding on to Portland and Seattle. S. Sasaki, retiring freight department manager, has been assigned to Mitsui's London Office.

FULL SPEED!

Captain K. L. Olsen, master of the Atlantic Refining Company tanker H. C. Folger, recently in port at Los Angeles harbor, has quite a record to regard. Still in his twenties, Captain Olsen joined the H. C. Folger as an A.B. seven years ago, when the vessel was launched at San Francisco and has remained with her since. He advanced through the grades of quartermaster, third, second, and first officer to that of master in six years. That's making knots!

L. A. AGENT NEW ROUTE

John C. Ogden, well known Pacific Coast shipping expert, is agent at Los Angeles for a new freight line between Los Angeles harbor and Oriental ports, announced by the Tatsuma Kisen Kabusgiki Kaisha. Mr. Ogden recently toured Asiatic shipping centers in interest of the service.

FAMOUS SKIPPER CROSSES BAR

Captain Robert Greig, veteran master, passed away July 22 at his home in Oakland. Captain Greig was well known in shipping circles. He retired from active duty about twenty-five years ago. He was a native of Scotland and during his time at sea service commanded several sailing ships of the Shire Line owned by Thomas Law & Company, Glasgow. He was presented with a gold watch by President Ulysses S. Grant for rescuing the crew of the American ship Alice Ball, this heroic performance occurring in the Seventies. Captain Greig crossed the bar at the age of eighty-four.



HAWAII

ISLANDS OF SUMMER COOLNESS

"It was my good fortune last summer to have an opportunity to visit Hawaii," writes Harold H. Yost in *Mr. Foster's Travel Magazine*. "While the fresh trade winds blew gratefully in our faces at Honolulu we were whisked through avenues gorgeous with flowering trees out to our hotel at the beach. And there, with the cool breeze rustling through the coco palms and the cool sound of waves on the beach outside my window, I knew that I had come to Hawaii at the finest season of all the year. Certain it is that for the traveler the summer months are unequalled in Hawaii."

Visit HAWAII this month or next. Matson Line inclusive (all expense) 21 day tours range in cost from \$267 to \$381, each person. Fare only, \$180 to \$220, round trip. Write us for literature.



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Oceanic S. S. Co.'s sailings: Ventura, April 8; Sonoma, May 6; Ventura June 10, July 8, August 12, etc. Transshipping at Sydney to favorite Java lines to Singapore; from Singapore splendid Government built steamers of Dollar Line to Marseilles or New York. \$140 extra via Panama Canal.

Standard Service Throughout

Honolulu, \$220 Round Trip, First Class
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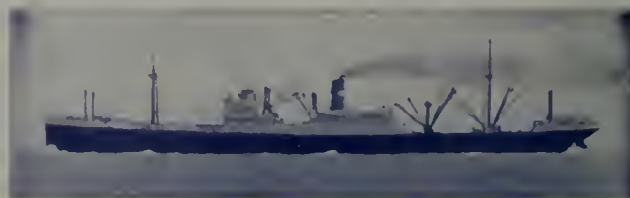
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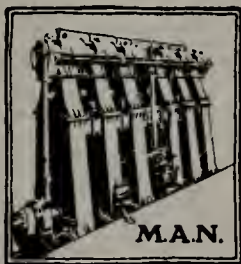
120 Market Street

San Francisco, Cal.



If these three men met—

One is chief engineer of a ship that is driven by a Hamilton steam engine. ¶ Another is a Cuban planter, who for ten years has used Hamilton engines and mills to grind sugar cane. ¶ The third is a municipal engineer in charge of a Hamilton pumping engine that supplies a town with water. ¶ If these men met and talked about their Hamilton engines, they would inevitably use the word "dependability." ¶ In each of these places, dependability counts most. The ship engine *must* not fail, especially in a storm. The mill *must* not stop grinding sugar cane during the season. People *must* be supplied with water. ¶ And in deciding upon the type and design of Diesel that would be best to bear the name Hamilton, the most dependable of all was chosen.



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And *direct* communication! From distances as great as eight thousand five hundred miles. Such is the performance of Federal *Continuous-Wave* Marine Radio equipment.

Masters are enabled to communicate *direct* with their owners; report their daily position, condition of cargo, time of arrival, time of departure—throughout their entire voyage.

Federal Marine Radio equipment stands alone in performance.

For a nominal sum we furnish a complete radio communication and maintenance service—a service that is meeting the approval of ship owners in growing numbers. Service stations maintained in all principal ports, insures perfect operation at all times.

Why not equip your vessels with Federal *Continuous-Wave* Marine Radio equipment and be *assured* of long range communication so essential to present day demands?



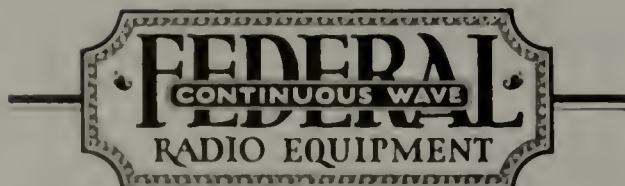
FEDERAL TELEGRAPH COMPANY

SAN FRANCISCO

25 BEAVER STREET, NEW YORK CITY

Japan—China Representatives:

Sperry Gyroscope Co., Mitsui Building, Tokio



PANAMA TOLLS

STATEMENT SHOWING EXACT PRESENT STATUS OF ADMINISTRATION OF DOUBLE STANDARD ON CANAL TOLLS AND PROPOSED CHANGE TO SINGLE STANDARD WITH LOWER TOLLS

By COL. M. L. WALKER
Governor the Panama Canal

ITEMS recently appearing in many of the daily papers and in practically all periodicals dealing with marine matters indicate such entire misapprehension of the intention and effect of proposed legislation basing tolls upon Panama Canal rules of measurement only, that it seems desirable that those interested be correctly informed.

The present situation is that, due to the Attorney General's decision as to the meaning of certain language in the basic Panama Canal Act, all vessels must be measured both by Panama Canal rules and by the United States rules for measurement of vessels. Then, applying the rates of \$1.20 per ton Panama Canal rules and \$1.25 per ton United States rules, the vessels pay whichever results in the smaller tolls bill.

This double system of measurement is not only a considerable administrative difficulty for the Canal authorities, but the use of the United States rules as interpreted by the Commissioner of Navigation results in additional embarrassment, since all changes made by him from time to time in his interpretations must apply at the Canal, often resulting in vessels having considerable variations made in their tolls bills in consecutive trips through the Canal, when no change whatever may have been made in the ship itself or in the rates for tolls. This variation in tolls without any apparent reason is difficult to explain to ship-owners, especially to those of foreign flags.

Furthermore, vessels of almost identical construction and of identical carrying capacity are rated differently as to net tonnage because of slight differences in the size of openings, in arrangement of fuel pumps, or other differences not connected with the carrying capacity of the ship. Illustrative of this is the case of the steamers Gold Shell and Silver Shell, two ships of exactly the same dimensions and the same cargo carrying capacity, the former paying tolls of \$4386.25 and the latter \$5076.25, for no other reason than that there is a difference in location of a small fuel transfer pump.

Another illustration of the absurdities due to the present method of measuring net registered tonnage is the case of a ship recently transiting the canal, where the captain forgot to carry into effect orders which he had received to knock the cleats off a certain opening, and had to pay an additional \$1200 toll because of such forgetfulness. In other words, this ship could have benefited to the extent of a \$1200 reduction in tolls by having these cleats removed, although the cargo was actually in the compartment, and whether cleats were there or not had no effect upon the carrying capacity of the ship.

The Panama Canal administration has been endeavoring for some years to have the Panama Canal rules made the sole standard of measurement. Should these rules be applied without any change in present toll charges, the result would be a considerable increase in the collection of tolls, and, consequently, there would result a heavier burden on shipping. Realizing the objection to this increase, it is proposed that, if the bill adopting the Panama Canal rules as the sole

basis of measurement becomes a law, the President will be asked to issue an executive order reducing the rates to \$1 per ton loaded and 60 cents per ton in ballast, to be effective as soon as the above legislation becomes operative. Instead of the proposed change putting an additional burden of several million dollars on shipping, definite calculation shows that during the last fiscal year the Panama Canal would have collected \$494,357.54 less in tolls than under the existing double system of measuring ships, and that for the first six months of the present fiscal year this reduction in tolls would have amounted to \$50,053.21.

The Panama Canal rules, prepared by Doctor Emory R. Johnson, dean of the Wharton School of Finance and Commerce, University of Pennsylvania, are believed to provide a much fairer index of a vessel's earning capacity than the United States rules. It is quite true that if the change is made some individual ships will pay somewhat higher tolls than they do now, but the general effect upon shipping is a slight reduction in tolls, and it is believed the opinion of shipping men as a whole, if they will inform themselves as to what is proposed, will be favorable to the legislation asked.

PRINTING TELEGRAPH SYSTEM FOR DISPATCH OF VESSELS THROUGH THE CANAL

TO facilitate the safe dispatch of ships through the Panama Canal a printing telegraph system has been installed, with sending and receiving instruments in the offices of the port captains at Balboa and Cristobal, and at the Gatun, Pedro Miguel, and Miraflores Locks. These instruments are operated like an ordinary typewriter, and a message written at any one office is reproduced automatically and instantaneously at every other office on the line.

Prior to the installation of these machines, orders governing the dispatch of ships and messages relating to their various requirements were transmitted by telephone, with inevitable delay when the same information had to be conveyed to several stations, and constant difficulty in assuring accurate transmission and receipt. Since the human ear, voice, and recollection were all involved, occasional error and misunderstanding were inevitable. With the growth of traffic through the canal the need for a more rapid and dependable method of communication became urgent.

The new printing telegraph instruments have now been in satisfactory operation for approximately three months. Not only is the necessary information regarding the movement of vessels furnished simultaneously to all concerned, but the possibility of error is reduced to a minimum, and there is a permanent record at each station of orders issued and received.

The naval radio station at Balboa is connected by printing telegraph with the port captain's office at Balboa, but not with the other offices on the main circuit.

The printing telegraph system was installed and is maintained by the Panama Railroad Company in connection with its existing telephone, telegraph, and electric clock service.

(PANAMA CANAL RECORD)

The greatest aid

to Navigation



Admiral Line Steamer H. F. ALEXANDER

Proceed in Dense Fog

—with safety—without delay! Fog conditions at harbor entrances mean no delay—no loss of time—to the vessel equipped to take radio bearings with a Kolster Radio Compass.

Despite the weather, fog, snow or a stiff sou'wester—the radio wave pierces through. With the Kolster Radio Compass, the master can take direct bearings of radio fog signaling stations established by the United States Bureau of Lighthouses and guide his ship to safety and without delay.

The Kolster Radio Compass can be installed in the chart room of any vessel. Its operation by deck officers is extremely simple—no special training or knowledge of radio apparatus is necessary.

Write for your copy of Bulletin 25



FEDERAL TELEGRAPH COMPANY

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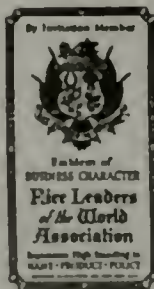




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Whenever you see the words *Tape-Marked* on the burlap, or find the red, white and blue *Tape-Marker* in one of the strands, you will know the rope is Columbian. Its extra strength and long wearing qualities have made it a leader in the marine field.

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Pacific Marine Review

The National Magazine of Shipping

SEPTEMBER, 1925

SAN FRANCISCO
PUBLIC LIBRARY

Diesel vs. steam power—an actual record under practically identical conditions

THE Diesel-driven "Isle de Java" and the steam-driven "Oakwood," otherwise twin vessels, left the Pacific Coast at about the same time, went over the same route and touched at Honolulu and Singapore. At Honolulu, fuel and supplies for the motorship cost \$2600; for the steamship \$14,000. At Singapore, the motorship had gained three weeks on the steamship. The motorship carried a 3989-ton cargo with a crew of 25 men at a labor cost of \$2565 per month. The steamship carried only a 3600-ton cargo, but had a crew of 39 men at \$3950 per month.

Like the "Isle de Java," cargo vessels operated for profit should be driven by

McINTOSH & SEYMOUR DIESEL ENGINES



McINTOSH & SEYMOUR CORPORATION, AUBURN, N.Y.



Official Organ
PACIFIC AMERICAN
STEAMSHIP ASSOCIATION

Official Organ
SHIPOWNERS' ASSOCIATION
OF THE PACIFIC COAST

What makes a double play?



GOOD FIELDING by the short stop is not enough. Second base must be covered, and so must first. Double plays are team plays and every man must play his part.

Oxy-acetylene welding requires double plays, too.

A good weld does not make oxy-acetylene welding an economical part of your business. The weld must be good, it is true; but in addition, the work must be handled rapidly and economically if the oxy-acetylene process is to become an integral part of your production.

In every Linde division office there is a Service Engineer. He is the "field captain" of the Linde Process Service in that division, and he "assists" the Service Operators and Service Supervisors to make oxywelding a part of your "team." He may suggest a better way to deliver work to your welder. He may design a new jig. He may even lay out a central welding department. But he can also demonstrate the desirability of welding and prove the strength of your welds to buyers of your products and to technical committees.

Service Engineers are a part of Linde Process Service and their help is free to Linde customers for the asking.

A double play in the welding pipe

A forty-mile pipe line had to be laid in a country where the temperature ranged from 30 below to 90 above zero. The engineers came to the reluctant conclusion that a welded line would not permit enough expansion. The Service Engineer calculated the expansion for them and convinced them that a special joint every two hundred feet would be adequate. In addition, he showed them how to "leap frog" their welding gangs from either end of the line, using only one gang to line up the pipe for each two gangs of welders. And so the company has a better and cheaper and more permanent line than they could have had without service.

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New York City
Nov. 9-14, 1925

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Shipowners' Association
of the Pacific

Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager.

A DIAMOND JUBILEE

California Invites the Marine World to Her Golden Gate for a Hilarious Birthday Party

ON September 9, 1850, California was admitted to the Union of the United States of America as a sovereign state. We are, therefore, in this month of September, 1925, celebrating the Diamond Jubilee of the State of California, and, by unanimous consent, San Francisco, the city of the pioneers, has been chosen queen city of the state and site for the official celebration of this history-making event.

San Francisco, "warden of two continents," sitting by her marine gateway, for two decades "serene, indifferent" poured a stream of gold into the lap of mother Columbia when that matron was most sorely in need of funds. Then began a great movement in the state of California to upbuild the more permanent sources of wealth—agriculture, horticulture, and manufacturing. California still leads the United States in the production of gold, but the value of her farm produce, commerce, and manufactures now far outstrips the total value of her mine products, and the Golden Gate and other gates to California ports are welcoming on the inward and speeding on the outward voyages thousands of richly laden vessels from and to the marts of world trade.

The growth of California's population and wealth is going forward at an ever accelerating rate. In 1850 there were many prophets among the pioneers, but none whose vision caught the progress that had been made by 1900. At the time of our Golden Jubilee, many poets and seers looked into the future, but we find no word picture measuring up to the reality of 1925. Only last month a prophet of Sydney, Australia, just home from his second visit to San Francisco, broke into print with the prediction that San Francisco Bay, before another fifty years, would be the world's premier shipping port and that the combined bay cities would be the largest city in the world. Twenty millions was his estimate for California's population in 1975. Project the curve of rate of growth and see where it leads. Perhaps this prophet also is underestimating.

Be that as it may, we know from fifty years' personal experience that California is progressing with great speed, and no man can tell what the rate of that speed will be for the next generation. The greater part of the state's area is still undeveloped. Opportunities are constantly presenting themselves to the

manufacturer. Lumber, cotton, oil, fruit, gold, grain, silver, and power, plus capital, brains, and energy certainly should equal permanent prosperity for a great population in this Golden State.

We set the diamond in her golden crown

Our hearts aglow with love and inspiration.

Fire, quake, nor flood her destiny can down,

The fairest land in all God's good creation.

Need of Nautical Training

AT times of Diamond Jubilee while we are congratulating ourselves on past achievement and looking forward to greater progress in the future it would be well at the same time to face the responsibilities involved and gird ourselves to assume the task.

California is now the second state in the Union so far as volume, value, and variety of ocean borne commerce is concerned. San Francisco is the second port in the United States in the registration of ocean shipping. California boasts first place in educational facilities and educational ambitions. Why not then a California nautical training school and ship?

New York and Massachusetts each have a very fine institution of this character and there is much agitation in other maritime states for similar schools. California is more able to underwrite such a school than is any other state in the Union.

Congress by enactment has directed the Secretary of the Navy to loan suitable vessels annually to be used for cruising purposes by the students of such schools under supervision of naval officers. San Francisco is specified in the act as one of the ports at which this courtesy will be extended.

As a matter of commercial interest the state of California can well afford to establish and maintain a nautical school as part of our great system of public schools. We are giving free instruction now up to and including the highest university post-graduate work in practically every trade and profession except that of navigator and operating marine engineer. The value of the properties directed and operated by the men of these two professions and owned in the state of California would be well up in the list of the highest valued classes of property, and on its efficient

direction and operation depend much of the actual and potential values of many other properties.

As an adjunct to the scheme for national defense and the training of naval reserve officers such a school would be invaluable. It would supplement the excellent work of the Sea Scouts organization and would be a great factor through trans-Pacific cruising in bringing about more intelligent international dealings and a better understanding between nations.

An excellent school of this character with a regular schedule of training cruises has been maintained at Boston by the state of Massachusetts since 1891. This school has a two-year course of intensive training and during its history has put its impression on about 2200 young men. In 1920 there were 193 cadets connected with the school and the state's budget therefor was approximately \$80,000. Each cadet makes a deposit of \$130 on entering, which covers the expense of white and blue uniforms, technical text-books, engineering laboratory supplies and other requirements. An additional deposit of \$25 is made on entering the second year. This \$155 is credited to a clothing fund and is sufficient with reasonable care to keep cadets shipshape as to uniforms for the two years. Board, room, and tuition are free afloat or ashore.

In view of the tremendous strides California is making as an owner and operator of ocean shipping it would seem that the state could easily find room on its immense budget for a nautical training school.

Our Petroleum Supply

AFTER a nation-wide and prolonged survey by many operators, experts, and scientists, the American Petroleum Institute has recently transmitted to the Federal Oil Conservation Board at Washington a 300-page report containing observations and conclusions of far reaching importance to the shipowner and marine engineer.

It is reassuring to read that "there is no imminent danger of the exhaustion of the petroleum reserve of the United States." Temporary shortage or surplus will be constantly occurring and will be reflected in and corrected by price fluctuation.

Five billion, three hundred million barrels of crude oil is the yield expected from existing wells and proved acreage by present methods of flowing and pumping. After flowing ceases and pumping becomes impracticable there will remain in this proved area twenty-six billion barrels of crude oil, a considerable portion of which can be recovered by other methods when price justifies. Improvements in deep drilling are expected to discover deposits under these areas which will be equal to the discovery of new fields.

In addition to this vast known supply, there are the great oil reserve lands which have not been fully explored and in which the geological strata indicate the possibility of large bodies of oil. These lands comprise over a billion acres.

Another reserve supply lies in the oil bearing shale, coal, and lignite deposits which are so huge that they promise a practically unlimited supply when price justifies or when improved methods make production more economical.

Constant improvement in engineering practice tends to make the production go further in all industrial uses. So that it is entirely reasonable to assume that the oil resources of the United States, including oil from wells, shale, and coal, and lignites, assure the country of a sufficient supply of motor fuel and lubricants for the national defense and for essential uses beyond the time when science will limit the demand by developing more efficient use of, or substitutes for, oil, or will displace its use as a source of power by harnessing a natural energy.

The Shipping Board and the Budget

BASED on current expenditures of \$24,000,000, the Shipping Board has asked that \$22,000,000 be provided for the fiscal year 1927. Admiral Palmer, head of the Emergency Fleet Corporation, estimated that \$18,000,000 would be sufficient to operate all the ships. The Budget Bureau has cut this latter amount to \$15,000,000 as an imperative maximum.

Now the Shipping Board declares the big passenger liners will have to be laid up in order to keep the freighters running. This, of course, is largely political propaganda to bring popular pressure on the Budget Bureau. "The Leviathan," says the Shipping Board, "is America's challenge to the maritime world." Certainly if a magnificent marine gesture is necessary no country on this earth can more easily afford to make and maintain such a gesture than the United States of America.

"On the other hand," says the Shipping Board again, "the essential needs of the nation must be served by our freight steamers." Since there is so much more hold capacity than freight floating around these days, it would seem scarcely necessary to keep up a government fleet for freight purposes. The economic law of supply and demand will keep the freight rates at very low levels for some years to come and there will be no danger of any foreign freight ships combining to exploit the American producer.

The Shipping Board will keep the passenger lines running, even if it is necessary to curtail the freight services and will probably pull through on the \$15,000,000 without breaking the heart of any commissioner.

Another Oil Company Enters Marine Field

THE latest addition to the retail marine oil field on the West Coast is the Richfield Oil Company of Los Angeles. The growing demand for fuel oil and gasoline for marine as well as stationary power plants has prompted this firm to undertake the construction of distributing plants at Los Angeles Harbor, South San Francisco, and Oakland. This step is the natural result of growth as a marketing company, and the new plants will be ready to make deliveries between October 15 and November 1.

At the present time the Richfield Oil Company is the largest shipper of fuel oil to the mining industry of Arizona, and has for a long time specialized in supplying fuel oil to the industrial field.



Photo by Habenicht

J. J. TYNAN

Joseph J. Tynan, for twenty years general manager of the Union Plant of the Bethlehem Shipbuilding Corporation, Ltd., has recently been appointed vice-president in charge of Pacific Coast operations for the Bethlehem Steel Company. This is a well-merited promotion. Mr. Tynan possesses a rare combination of mechanical ingenuity, intelligent foresight, tireless energy, and ability to handle men. He is now enjoying the just reward of a lifetime of consistent endeavor and honest hard work.

SAN FRANCISCO BAY

Center of Commerce and Population for the Pacific Coast and One of the World's Great Harbors

"IT is not a port, but a whole pocketful of ports, in which a great many squadrons could enter together without one being discovered by the other except that they would see one another while entering or going out through the narrow entrance." Thus replied the doughty Spanish Captain, Don Juan de Ayala, when asked by Junipero Serra if the bay seemed to him a good port. And literally that is what San Francisco Bay is today, a huge "pocketful of ports."

The history and the development of this bay and of its many ports is inseparably linked up with the development of California and, indeed, of the whole Pacific Coast. We therefore feel that in this month of California's Diamond Jubilee celebration, it is most fitting from a marine standpoint to call attention to a few of the high lights of location, natural adaptability, and development which place this harbor well up among the great world ports of today and presage its leadership in the future. H. M. Chittenden, in a paper on "Ports of the Pacific," read before the American Society of Civil Engineers in November, 1912, gave a masterly description of San Francisco Bay, from which we quote as follows:

"Whatever changes the future may bring forth, it is now true, and for a long while will so remain, that San Francisco Bay is far and away the most important port on the Pacific Coast. It is a wonderful port—wonderful in the strategic relations to its California hinterland and to the great interior of the country; wonderful in its physical conformation as a vast sheltered harbor opening in, through a narrow, deep, and easily defended entrance, from a coast line almost devoid of harbors for hundreds of miles in either direction; wonderful in its romantic history; and wonderful in its relation to the commerce of the world. (Nature wrought a masterpiece when she made San Francisco Bay.) Its great expanse and its navigable connections north and south through the rich valleys of the San Joaquin and Sacramento, fit it perfectly at the entrepot of a vast empire. The work of nature was supplemented by the good offices of fortune which early turned the attention of the world to this port and laid the foundations of its future greatness so deep that neither earthquake, fire, nor the growth of rivals can shake it.



Looking up Market street, San Francisco, from the Ferry Building, about 1897.

"The Golden Gate—named three centuries before, in beautiful prophecy of the Argonauts of '49, whose anchors dropped into yellow sands brought down by the slicken-laden streams of the Sierras—was the scene of a mighty commerce while yet only random traders sought the furry wealth of the harbors further north. The first transcontinental railway had poured its traffic into the valley of the Sacramento for twenty years before any other portion of the coast was similarly favored. San Francisco had written the most important chapter of her history while her sister ports were still almost unknown to the world. Congress did well when it selected the California metropolis as the site for the exposition to celebrate the opening of the great canal.

"What a contrast it will be—the struggling mass of humanity and freight on its way across the fever stricken Isthmus to the land of golden promise in '49, and the floating palaces which will then pass safely through Culebra Hill to a scene of resplendent riches undreamed of by even the wildest imagination of sixty-six years before! Where else on the round earth has modern progress wrought so great a change in so short a time!"

Consider the mere physical size of this harbor set down here in the center of California's coast line. Forty miles long by an average of ten miles in width, its area is 420 square miles, or 268,800 acres of salt water. One hundred and ninety of these square miles comprise water with a minimum depth of 30 feet at low tide. The mean tidal range is 4.3 feet and the maximum tidal range is 8 feet. Some bay!

Its waters lave the shores of nine counties. Forty-five or more municipal corporations have established programs for port development on its 350 miles of rim. Many of these port projects are active terminals with healthy and growing tonnage.

Since only a very few, even among native Californians, ever stop to consider the vast stretches of this inland sea and its importance as a commercial asset to the State of California, let us take a run around the rim and notice a few of the high spots.

Starting at the south side of the Golden Gate we have the City and County of San Francisco. Her ocean frontage is preserved as a public playground with many splendid improvements erected by the city or

through the gifts of her generous citizens. The entrance to the bay is, on both sides, a military reservation and is of no value for commercial water front purposes on account of tidal currents. Adjoining this reservation is the Marina, site of the Panama-Pacific International Exposition and now being developed as an aquatic park. Two ferry slips, the United States Army transport docks, fishermen's lagoon, and wharves bring us to another small military reservation; and then we pass in review the seven miles of commercial waterfront of the Port of San Francisco, with its great passenger ferry building in the center and its splendid modern piers, all owned and operated by the State of California.

The island on our left is Yerba Buena, or Goat Island, the waterfront at our right was at one time Yerba Buena cove, a shallow tidal flat between Telegraph Hill and Rincon Hill. Its original conformation may be mentally reconstructed through study of the old pictures illustrating this article. San Francisco's down-town financial and wholesale district is literally built on filled-in ground, much of it filled in over the bones of old sailing ships. Excavations for foundations of skyscrapers often bring to light the frame work of some old hulk abandoned in the mud during the gold rush days. Seventy-five years back this cove was full of ships. Some seventy thousand passengers were landed in the year 1850. Today, one is surprised at seeing so few ships, and yet more than ten million long tons of freight are handled over these piers in a year, and about 55,000,000 passengers. Through that central ferry building alone fifty-two million passengers were checked last year.

Passing south, we next note a channel flanked with large warehouse and lumber yards, Channel Street, an improved water way much used by smaller coasting steamers and with many privately-owned lumber, hay, grain, and coal docks. South of this channel is the privately owned warehouse on Mission Rock about a quarter mile offshore, and on the shore line two large piers are under construction by the Board of State Harbor Commissioners. Freight yards and freight ferry slips of two large railroad systems and a few boat building plants bring us to the waterfront of the famous Potrero Works of the Union Plant of the Bethlehem Shipbuilding Corporation, Ltd., with its three floating dry-docks, large shipbuilding ways, and a complete equipment of shops and machinery adequate to build any modern vessel or undertake any engineering project.

The Union Iron Works established a steel shipbuilding plant on this site in 1881 after a long history reaching back to pioneer times. Here were built in the early years many of the finest ships of Uncle Sam's modern navy, among which the battleship Oregon and the cruiser Olympia stand out prominently because of their unusual performance during the Spanish War. The pioneering of this plant, 3000 miles from any similar establishment, and its successful functioning in competition with eastern yards, was at the time a great source of wonder

to the shipbuilding world; but to San Francisco it was merely another example of that bold spirit of adventure which is responsible for so much of our western development.

Rounding a small hilly point, every inch of which is replete with early industrial romance, we come on the docks of the Western Sugar Refinery and the abattoirs of butcher-town. Opening still southward is a flat valley with another waterway known as Islais Creek basin. Here the Board of State Harbor Commissioners are improving a large waterfrontage for a lumber and industrial terminal and have bought sixty-four blocks of industrial sites. Next come more boat yards and then the great dry-docks at Hunter's Point—largest commercially operated graving dock in America, able to take the Majestic, the Leviathan, or any other hull afloat.

So much for the port of San Francisco. Now let us rapidly sketch the other forty odd that dot the rim of San Francisco's Bay.

South San Francisco—a healthy industrial town with two deep water channels serving steel works, pipe works, packing plants, and other industries.

Burlingame-San Mateo with about ten miles of waterfront and elaborate plans for future development.

Redwood City with a navigable slough running into the center of its business section and with deep water approach to within two miles. Did you ever hear of a harbor where a hydraulic dredge could pump the mud through a wet grinding process and a rotary kiln and return it in the shape of the finest Portland cement for construction of piers and warehouses? They are doing just that at Redwood City, and could do it at many other points on this wonderful harbor. A three million dollar cement plant working on material pumped out of the bay!

Palo Alto, site of the famous Leland Stanford Junior University and of several important factories, including the Federal Telegraph Company's plant.

South Basin, the port project of Mountain View and Sunnyvale, keeps two freight motorships busy carrying fruit and vegetable produce to San Francisco.



P. M. steamer Oregon, October 25, 1850, bringing news of admission of California to statehood.

Alviso, the port of San Jose—prune and apricot metropolis of the world, the home of the South Bay Yacht Club, and destined to once more become an important shipping point as she was before the railroads were built up the Peninsula.

At Alviso we turn northward along the eastern rim, and merely note in passing Newark, Alvarado, Hayward's Landing, Mulford's Landing, Bay Farm Island, and San Leandro, each with a potential or actual harbor scheme.

Alameda—a thriving city east of San Francisco with a waterfront so extensive that she can present a complete first-class naval base site to the Federal Government and still have enough left for many public and private pleasure beaches and for seven miles of commercial and industrial waterfront, with extensive ship and engine building and repair plants, many manufacturing establishments, and the Encinal Terminals, important transshipping pier, warehouses, and the home and outfitting basin of the largest and finest fleet of full-rigged sailing ships in the world—"The Alaska Packers." All these with direct transcontinental connection and deep water alongside.



Yerba Buena Cove, 1848.

manufacturing concerns are establishing branch factories at Oakland.

Berkeley—site of the University of California and owner of five miles of waterfront, with extensive tidelands, has a very large industrial development with many manufacturing plants and with two transcontinental rail connections. Her waterfront is just beginning to develop. One long wharf has been in use for some years and work is just com-

mencing on a passenger and automobile ferry slip. Emeryville and Albany are two municipalities cornering into Oakland and Berkeley and each has large undeveloped waterfront projects.

Richmond—a thriving industrial city with well planned inner and outer harbor, wharves, and terminals. Site of the Standard Oil Company's refinery and the Pullman shops.

Winchaven—the waterside warehouse and shipping point of the California Wine Association.

Point Orient. Shipping point for the Standard Oil Company of California and dock of the biggest oil refinery in the West.

Nitro, Pinole, Hercules, Rodeo, each possessing rail



An aerial perspective of the waterfront and the city of San Francisco, 1925.

Oakland—Wonder city of Central California, spreading out over her beautiful hills—no longer "the bedroom of San Francisco," but a lusty industrial giant with an inner and outer harbor development well under way, which involves the expenditure of many millions of dollars. Large shipbuilding yards, gas and diesel engine building plants, automobile assembling establishments, foundries, canneries, and various factories combine to make Oakland's industrial section a very busy locality. Boasting a population close to the half-million mark and growing very rapidly, this East Bay City connects its deep-water harbor directly with four great transcontinental railway systems. Its shipping statistics are multiplying at an astonishing rate and its business men are unitedly determined to find a large place on the commercial map of the world. They have wonderful industrial sites to offer at very attractive terms, and many national and international

and dock with deep-water alongside and each attached to some large industry in explosives.

Oleum.—Shipping point and port for the refinery and tank farm of the Union Oil Company.

Selby—Selby Works' dock of the American Smelting & Refining Co.

Crockett—one of the busiest docks on the bay, handling the bulk of the Hawaiian sugar crop and feeding the great California-Hawaiian Sugar Refinery, said to be the largest in the world.

Port Costa—famous old grain port of the windjammer days and still busy shipping out barley and wheat. South end of the famous ferry link in the Central-Southern Pacific Railroad System, whereon are used the world's largest train ferries.

Vallejo Junction with its auto ferries and other docks.

Avon and Ozol—two great oil ports; Martinez and Bay Point, important lumber docks; Pittsburg, with its

great steel works, bring us to the delta of the San Joaquin and Sacramento Rivers, where Antioch, Duttons, Suisun and other landings send down an immense tonnage of vegetable products.

Benicia—site of a great arsenal, north terminal of the railroad ferry, and many other industrial establishments—was formerly a famous shipbuilding town.

Vallejo—a thriving modern city, port of the Napa Valley, and housing most of the workmen of the Mare Island Navy Yard, which lies just across the Napa River. This great naval station, for a long time the only one on the Pacific Coast, is fully equipped for building and repairing all classes of modern naval craft. Vallejo handles large shipments of flour and cereals southbound. It is connected with San Francisco by a line of fast passenger and freight steamers.

Sausalito—an important passenger ferry point from



Yerba Buena Cove, 1849.

which eight million passengers annually are carried back and forth by ferries. Sausalito in the windjammer days was a favorite anchorage for sailing ships and a good place to get fresh water. It is now the home of several yacht clubs, a busy boat building center, and the gateway to the beautiful suburban residence districts of Marin County.

Now we are back at the Golden Gate, on the north side, and have some sketchy idea of the number and magnitude of our port projects on San Francisco Bay. Hundreds of millions in capital and much brain energy will have been expended before these are all completed. In the meantime we should all visualize this great body of salt water, not as a "Chinese Wall of isolation" cutting us off from the main land, but as a God-given highway for the most economical means of transportation connecting us with the trade marts of the world.



Business district and waterfront of San Francisco, 1900.

SHIPPING POLICY CONFERENCES

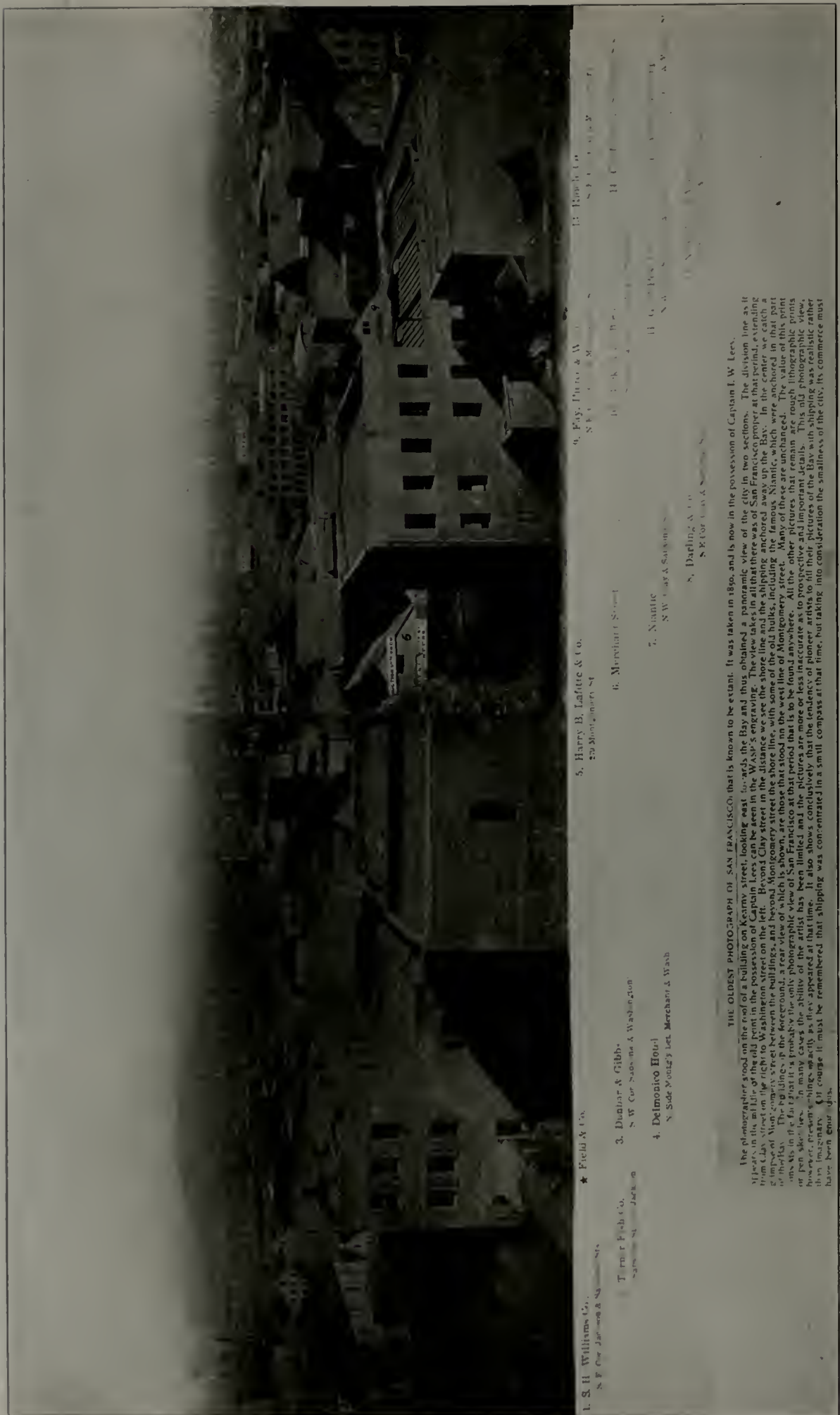
REPRESENTATIVES of commercial, agricultural, transportation, and other interests on the Pacific Coast have been asked through chambers of commerce and cooperative and trade associations to participate in a series of conferences on the Pacific Coast under the auspices of the National Merchant Marine Conference in an effort to formulate a national shipping policy. Problems involved in the shaping of a national shipping policy which is of vital interest to the Pacific Coast and the Intermountain region will come up for consideration.

The commercial and civil interests of the Pacific Coast cities are interwoven with and in a large measure dependent upon the development of shipping under the American flag. The work outlined for the various

committees comprising the national conference points to the growing importance of this region in relation to the shipping problem, as well as its interest in finding a proper solution.

The importance to the Pacific Coast of the settlement of the shipping problem and the establishment of a permanent policy in the formulation of which the potential as well as the actual trade development of this section will be taken into account is emphasized.

This effort of the National Chamber should be of great benefit in crystalizing and clarifying the American business mind on the subject of American ocean shipping. It has the hearty support of the American Steamship Association and of the Shipowners' Association of the Pacific Coast.



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11. J. P. F. & Co.,
S. E. Cor. Jackson & M.
12. J. P. F. & Co.,
S. E. Cor. Jackson & M.
13. J. P. F. & Co.,
S. E. Cor. Jackson & M.
14. J. P. F. & Co.,
S. E. Cor. Jackson & M.

THE OLDEST PHOTOGRAPH OF SAN FRANCISCO that is known to be extant. It was taken in 1850, and is now in the possession of Captain I. W. Lees. The photographer stood on the roof of a building on Kearny street, looking east towards the Bay and thus obtained a panoramic view of the city in two sections. The division line as it appears in the middle of the old print in the possession of Captain Lees can be seen in the Wasp's engraving. The view takes in all that there was of San Francisco proper at that period, extending from Clay street on the right to Washington street on the left. Beyond Clay street in the distance were the ships anchored away up the Bay. In the center we catch a glimpse of the city of the future, the city of the present, the city of the past. All the buildings of the foreground, a rear view of which is shown, are those that stood on the west line of Montgomery street. Many of these are now gone. The value of this print as a historical document is probably the only photographic view of San Francisco at that period that is to be found anywhere. All the other pictures that remain are rough lithographic prints or pen sketches. In many cases the ability of the artist has been limited and the pictures are more or less inaccurate as to perspective and important details. This old photographic print, however, presents a picture exactly as they appeared at that time. It also shows conclusively that the tendency of pioneer artists to fill their pictures of the Bay with shipping was realistic rather than imaginary. Of course it must be remembered that shipping was concentrated in a small compass at that time, but taking into consideration the smallness of the city, its commerce must have been quite dense.

The business section and shipping of San Francisco about 1850. Illustration made from an engraving in an old copy of the San Francisco Wasp. The key was added for convenience and the photographic copy of the original caption placed on margin for ready reference. The home office of Pacific Marine Review is located at the extreme right of this picture on north side of Sacramento Street under the figure 14.



SAN FRANCISCO IN 1925

An airplane view of the southerly portion of San Francisco's financial and wholesale business district, together with part of the waterfront. This fine photograph was taken recently by Aerial Surveys of California. The home port of Pacific Marine Review is the lower left, one and three-quarters inches above lower border and one-half inch inside left-hand border. The large white building just above this is the new Federal Reserve Bank. During the construction of this bank the excavators uncovered the oak ribs and copper plated planking of a three-masted American clipper. Comparison of this picture with that appearing on the opposite page will give some idea of the extent of filling-in required for San Francisco to establish permanent deep-water frontage.



STEAMER DAY. SAN FRANCISCO. 1866

Unfortunately we possess no photographic record of that famous celebration on October 26, 1850, when the Panama Line steamer Oregon brought the good news that on September 9 of that year the Republic of California had been admitted as a sovereign state into the commonwealth of the United States. However, this famous cartoon, by E. Jump, made in 1866, will give some idea of the appearance of California Street on steamer day. We can best realize what this day meant to the California pioneers as we consider the lapse of time between September 9 and October 26. In 1850, forty-seven days was fast time for the transmission of important news between Washington and San Francisco. Today such news is known in San Francisco about three hours before the occurrence happens in Washington.

STEVEDORING OF AMERICAN CARGO

An Analysis of Loading and Discharging Costs Which on American Vessels Represent From 20 to 25 Per Cent of the Direct Operating Disbursements

By ROBERT H. OVERSTREET

A "STEVEDORE" is defined by Webster as "one whose occupation is to load and unload vessels in port." A "Longshoreman" is described as "one of a class of laborers about the wharves of a seaport, especially in loading or unloading vessels."

Stevedoring, the service of loading and/or discharging a vessel, represents from twenty (20) per cent to twenty-five (25) per cent of a vessel's direct operating disbursements. Services closely allied with stevedoring, such as receiving, tallying, and delivering cargo, may be counted upon to bring up the combined cost to as much as thirty (30) per cent of the direct operating expenses. Under normal conditions, a vessel is a liability when she is in port and an asset when she is on her way with cargo; consequently the cost of the actual work performed is not the most important factor. One must also reckon with the time taken to do the work. The longer in port the more costly the port charges. The cost of loading and/or discharging a vessel should also be reckoned closely with the revenue derived from the haul; many times, especially in the present stage of shipping, these costs have approached almost complete consumption of the ship's revenue.

If, then, stevedoring represents, say, from 20 to 25 per cent of the direct operating expenses, it is safe to assume that around 16 to 20 per cent represents the cost of labor of handling cargo.

Vessel's Liability

On cargo exported from this country, the vessel's liability begins when the cargo is receipted for by the receiving clerk. Such delivery may be by truck, railroad car, or lighter, all for the same vessel. In receiving cargo the clerical force on the dock is charged with the responsibility of performing all paper work. All cargo must be counted, weighed, measured, and otherwise inspected for condition, all of which information is essential to the ultimate issuance of the bill of lading.

Permits are issued to shippers, authorizing delivery of cargo at specified times. When the cargo arrives at the pier, the clerk lifts the permit and gives the delivery carrier a dock receipt after the cargo is placed on the pier, which receipt is later exchanged for bills of lading.

Stowage Plan

In advance of the arrival of the ship the dock has knowledge of the cargo to go forward, or at least has knowledge of the major consignments, and can work out a plan for stowage of the vessel. The plan is usually prepared by a clerk in conjunction with the stevedore and the dock superintendent, and is in effect the stevedore's specification for loading the steamer, so that she may accommodate all of her cargo booked and as well absorb it in the best manner to maintain her trim and stability. This plan may be rough in its original shape, as the finished graph cannot be drawn up to show the refinements until all cargo is in. Upon completion of loading, a plan is drawn up, which gives

in detail the location of the cargo. Information as to the location of the various parcels in the vessel is secured from the tallyman's record of loading.

Longshoremen

Longshoremen are obtained usually from in front of the dock bulkhead, where they are "shaped up," which means that the men are selected and formed into gangs to work on certain hatches. At piers where the work is constant, these men very often work together in the same gangs day in and day out, and as well the distribution of the gang as respects the men in the hold, on the deck, and on the dock, is confined wherever possible to the same men, which results in the building up of experience in a particular line of work that will increase the output of cargo handling. At the port of New York the longshoremen's wage agreement stipulates that the minimum number of men in a gang, when loading general cargo off a lighter alongside, shall be eighteen; when working off the pier, the additional number of men to be left to the discretion of the foreman in charge. According to the New York Longshoremen's agreement, the employer has the right to judge how all men are to be distributed. With a gang, say, of twenty men working cargo from the dock, the men would be distributed something like this: ten men in the hold, two men on deck acting as winchmen, and eight men on the dock. The number of men to a gang varies at the different ports.

The dock men take the cargo from the pile of rest on the dock and approach it to the ship's side at the hatch that is in readiness to receive it and which has been designated to receive it according to the stowage plan. At the ship's side the cargo is assembled into slings, varying in character according to the



Stevedores at Constantinople.

particular cargo being handled. This sling load is called a draft. Immediately the cargo is placed therein, after proper signalling from the longshoremen or foremen on the dock to the winchmen, it is hoisted up by the ship's winches and cleared of the ship's rail; then it is the winchman's responsibility to land the draft safely in the hold of the vessel where the sling is disengaged from the hook and those longshoremen working in the hold commence the stowing of it.

Cargo Protection

It is quite essential that the vessel make use of her cargo space to the best advantage, and to see that the packages are well stowed, leaving as few voids as possible, for, after all, the only thing the ship has to sell is her space, hence that space must be used judiciously. A ship well stowed not only procures greater ocean freight but greater protection for the cargo. All cargo except that of a bulk nature is dunnaged to protect it from damage that might be caused by rubbing, chafing or shifting. Dunnage may be in the form of cull lumber, random sizes; it may be burlap, paper, cord wood; in fact, any material that is worked into the ship along with the cargo to prevent damage.

In speaking of freight carried on vessels it is interesting to note that it is usually termed "cargo", while the same freight placed in railroad cars is usually termed a "shipment".

Consider for a moment the capacity of a vessel and her ability to accommodate cargo. Take a steamer selected at random, carrying 120,000 bushels of wheat, or 3214 tons, in addition to about 2800 tons of other miscellaneous cargo, a total of about 6000. The enormity of the capacity is probably better visualized when it could safely be said that the cargo that was placed in this ship would constitute a shipment made up of two freight trains with fifty cars each.

Responsibility of Ship's Officers

The master of the vessel is responsible for his charge, and in connection with the stowage and delivery of cargo should see that there is no smoking in the cargo holds and about the decks near hatches when cargo is being worked, and should do everything possible to prevent pilferage of cargo in the ship, and further to see that dunnage is properly cared for when not in use and not wasted or thrown away, except such as would be liable to damage cargo or is unfit for use.

It is the duty of the chief officer to see that all cargo holds are clean and in proper condition to receive cargo. He or his representative, the next officer in line, is in attendance during all cargo operations, taking note that the cargo is being handled properly and that no damage results to either the ship or the cargo.

The basic principles of stevedoring are not altogether axioms as yet, indicating the variable factors entering into the operation. For instance, one will say it costs more to load a vessel than it does to discharge her; another may express an opposite opinion regardless of the berth she is on, and yet both may perhaps be correct. Such comparisons are useless, unless like cargoes are compared with like cargoes, and then under similar conditions with vessels of the same type.

Cost of Handling

In this connection it may be interesting to know that the cost per ton to load cargo in United States ports is considerably less than the cost of discharging. For instance, during the month of May, 1924, on Shipping Board vessels the cost of loading 207 steamers averaged 95 cents per ton, whereas the cost of discharging 161 vessels averaged \$1.27 per ton. The combined tonnage loaded and discharged was 674,905, giving an average cost for both loading and discharging of \$1.06½. The reason for the higher cost of discharging cargo is the fact that there is a great deal more extra labor involved than in loading. Oftentimes cargo is piled to the ceiling of the piers, and most stevedores quoting per ton rates will place the cargo on the pier to a height known as man high. Any piling above that height is covered by extra labor at so much per hour per man, plus a percentage for insurance premiums and profit and overhead. Then, too, where the cargo of necessity is piled on the pier, it is necessary to reverse the operation when it is being delivered to the consignee. This process is known as breaking down cargo, the basis of payment to the stevedore being the same as in connection with the piling. This difference in the cost of loading and discharging is especially noticeable at North Atlantic ports, due undoubtedly to the tremendous volume of cargo moving through the ports and across the piers, which at times are not adequate to accommodate the freight. At South Atlantic ports there is not much

STEVEDORING

Stevedoring methods vary greatly in the ports of the world. Our picture shows Chinese coolies with bamboo pole trucks unloading steamer Westmoreland at a Shanghai go-down. These men, working on a handful of rice for fuel, carry almost unbelievable loads and work long hours very cheerfully for very little money. A study of the table of costs on the facing page will show tremendous variation between the costs of hand labor stevedoring, as well as the costs of stevedoring by power, as carried on at both American and foreign ports. There is ample room here for much improvement through standardization of method and equipment.



LOADING

Port	Tonnage	Steve. Cost	Aver. Cost per ton
New Orleans	1,678	\$1,666.56	\$0.9932
Port Arthur	4,972	2,443.18	.4914
Galveston	968	1,014.66	1.0482
Hongkong	343	36.04	.1051
Saigon	2,006.6	412.66	.2056
Cebu	220	114.39	.5199
Manila	243	30.00	.1235
Singapore	213	69.75	.3275
Cocanada	952	275.62	.2895
Colombo	350	56.32	.1609
Calcutta	8,028	1,556.54	.1939
Aden	8	3.42	.4275
Port Sudan	115	105.77	.8963
Port Said	1	.26	.2600
	<u>20,097.6</u>	<u>\$7,785.17</u>	<u>\$0.3874</u>

Average cost loading U.S. ports - \$0.672 ton

Average cost loading abroad - .212 ton

DISCHARGING

Port	Tonnage	Steve. Cost	Aver. Cost per ton
Kobe	1,202	\$ 625.75	\$0.5206
Yokohama	826	700.00	.8475
Otaru	616	125.00	.2029
Chemulpo	1,086	420.00	.3867
Dairen	1,220	210.59	.1752
Chinwangtao	600	175.20	.2920
Taku Bar	1,450	478.56	.3301
Shanghai	234	51.53	.2202
Hongkong	60	73.28	1.2213
Cebu	2,000	381.16	.1906
Manila	334	84.76	.2538
Aden	342	39.50	.1155
Port Sudan	11	14.42	1.3109
Suez	130	48.63	.3741
Port Said	301	79.60	.2645
New York	6,960	7,298.19	1.0486
Philadelphia	2,015	2,135.48	1.0598
Havana	467	350.00	.7495
New Orleans	220	285.47	1.2976
	<u>20,074</u>	<u>\$13,579.12</u>	<u>\$0.6765</u>

Average cost of discharge U.S. ports - \$1.05 ton

Average cost of discharge abroad .35½ tons

Table showing costs, loading and unloading, of selected vessel operating from the Gulf of Mexico to the Far East.

difference between the cost of loading and the cost of discharging, and the same is true of the Pacific Cast and Gulf, although it costs slightly more to discharge in the Gulf than it does to load.

To show briefly the results of a vessel's venture on stevedoring, a vessel was chosen at random, operating from the Gulf of Mexico to the Far East. The ports at which cargo was loaded and discharged are given, together with tonnage, stevedoring cost, and the average cost per ton. The results are shown in the table reproduced herewith.

It may also be interesting to know the percentage that the component costs of the various services bear to the total. During the month of May the total cost of loading was 90.12 per cent; overtime was 4.29 per cent; extra charges, such as piling cargo, breaking down cargo, long trucking, etc., amounted to 4.65 per cent; detentions, meaning lost time to longshoremen in such cases as delays due to the breaking of winches, shifting of lighters, etc., amounted to 0.94 per cent. It is interesting to note the make-up of the discharging costs, which run 82.19 per cent for the straight cost, and by straight cost is meant the number of tons times the rate per ton; overtime 2.81 per cent; extra charges 14.42 per cent; detentions 0.58 per cent.

Variable Factors

Of necessity, extra labor such as breaking down piles of cargo on the dock, tiering cargo on the dock, extra long trucking, cooping, and detentions due to deficiencies of the ship's cargo handling equipment, shifting vessel, lighters, etc., are variable factors and rise and fall according as the requirements of each particular ship are met.

Likewise, overtime is a variable, which fluctuates as the need for expediency of making a schedule or otherwise presents itself. Due to the position of the freight market at the present time there is not as much overtime being worked as there was during the past three or four years. It is perhaps significant that in connection with discharging, less attention is paid to the eventual sailing date of the vessel which is on schedule. Therefore, less overtime is worked. When loading commences it is apparent that greater haste is necessary as the sailing date approaches, in consequence whereof the loading consumes more overtime than the discharging.

Special Machine Methods

Different methods are in vogue at different ports for the handling of cargo, and inasmuch as the time is too short to present all of these matters, it will be sufficient perhaps to say that on the Pacific Coast a great many labor saving devices are in use; for instance, bagged cargo shipped from the Pacific Northwest is handled in very great quantities, and use is made of chutes and conveyors. On vessels having side cargo ports, the grain and flour are put into the ship from the dock by means of chutes, the bags reaching the hold of the vessel by gravity. Where there are no side ports in the steamer, frequently this bagged cargo is loaded from the dock over the rail by means of an endless belt conveyor, thence by a spiral conveyor or chute that is in the square of the hatch, at the bottom of which are lateral conveyors which carry the bagged cargo or case cargo to the place required in the hold, where it is then stowed.

At Port Arthur, with the improved facilities for handling case oil by means of conveyors, the contracting stevedore has been able to make record loadings. One vessel, for instance, took on 113,626 cases. There are but two conveyors at the case oil docks, hence the production above indicated was made by two case oil gangs in two hatches. The gangs will be composed of as many as twenty-six men, and the man hours consumed in loading the 113,626 cases was 1792. By converting the above number of cases into weight, we obtain 9,557,074 pounds, or 4267 tons, and by a further process of calculation this gives an indicated production of 2.38 tons per man hour.

(To be continued)



Assembling cargo of rice in sacks on the pier at Alexandria.

THE OPPORTUNITY OF STEAMSHIP CONFERENCES

By E. S. GREGG, Chief, Transportation Division, Department of Commerce

WHILE some discussion of steamship conferences has always been before the public, the attention given these organizations within the last five years has been intense. A steamship conference is, in essence, a monopoly, however brief its effective life may be. Few organizations can resist taking an advantage when it is offered, even though experience shows that in the long run self-interest dictates a moderate course.

As a consequence, we have seen the attempt of the Australian Government, with its state-owned and operated fleet, to destroy the conferences in that trade. More recently we have had the demand in Canada that the conferences in the North Atlantic be rendered useless by the establishment of a new line with a heavy government subsidy and a provision that it keep clear of all conferences. There have even been in the United States some proposals to abolish conferences. This is one of the most important questions before our exporters and shipowners.

Conferences Declared Necessary to Efficient Service

In the summary of congressional hearings on the investigation of shipping combinations, held in 1913, this statement occurs: "Practically all steamship representatives who testified before the committee, as well as a majority of the leading American exporting and importing firms who expressed their views on the subject to the committee, contended that shipping agreements, conference relations, or oral understandings which steamship lines have effected among themselves in nearly every branch of our foreign trade are a natural evolution and are necessary if shippers are at all times to enjoy ample tonnage and efficient, frequent, and regular service at reasonable rates.

"Such agreements, it is contended, are a protection to both shipper and shipowner. To the shipper they insure desired stability of rates and the elimination of secret agreements with competitors. To the shipowner they tend to secure a dependable return on the investment, thus enabling the lines to provide new facilities for the development of the trade."

Secret Procedure Causes Dissatisfaction

A large part of the dissatisfaction with steamship conferences in this country arises from the fact that complaints about rates and classification are not handled in an ordered public manner. If a shipper is dissatisfied with the ocean rate on his commodity he appeals to the steamship line by which most of his goods are shipped. If his request for revision is not granted, his only recourse is to ask this line to present his case

at the next meeting of the conference. Sometimes weeks go by and the shipper gets no answer to his request. He does not know whether his case was presented to the conference.

Even if he is convinced that his case came up before the conference he suspects that his side of the controversy could not adequately have been given by the representative of the steamship line whose self-interest lay in the opposite direction. He feels disgruntled because he had no chance to appear in person or by counsel to give evidence. He has been familiar all his life with open procedure in rail rate cases, and he expects similar treatment in ocean rate matters. In other words, the steamship conferences by their disregard of the point of view of the shipper have brought criticism on themselves.

Public Procedure for Rate Complaints Desirable

This situation was investigated by the transportation division last year. In the case of only one conference was it found that a shipper was occasionally allowed to be present at a conference meeting. In no instance, apparently, are complaints docketed in public with a date set for hearings and decisions. There is no regular method whereby shippers are notified of the conference's action.

Necessarily, the same procedure in use by the railroads would not be entirely applicable to steamship conferences. Rail lines once established over a route must continue to use that route and their competitors remain constant. In the steamship business the number of lines in a given trade fluctuates with the seasons of the year, the prosperity of the region, etc. Consequently, there could not be the same fixed procedure in handling rate complaints. However, a better understanding between shipper and shipowner could be developed if a regular public procedure for rate complaints were set up.

It is difficult to prove that steamship conferences have been oppressive and extortionate; shippers have very few well-supported instances along this line. Nevertheless, shippers in various countries have been and are dissatisfied with conferences. This dissatisfaction can be traced in large measure to minor points of procedure.

The steamship conferences, which perform a useful function in export trade, have an opportunity to forestall adverse public action by giving more attention to the manner in which complaints from shippers are handled. Secret actions, however fair, are not popular with the public.



RUBBER COVERING OF PROPELLER SHAFTS

By Commander C. S. McDOWELL, U. S. N.
Engineer Officer, Mare Island Navy Yard

A NAVY Yard, that remains the repair yard of a number of vessels for a period of years, has an opportunity to study its "children" as they age in sea service and to discover some of their faults.

The corrosion and pitting of propeller shafts and struts is, however, so common to all ships that it may hardly be called a fault, except as it varies in extent on different vessels or classes of vessels.

It has been noted on the destroyers coming to Mare Island, that the pitting and corrosion of the propeller shafts was progressing at a rather rapid rate and it was determined that some steps should be taken to arrest this action. The conditions existing on a destroyer are particularly favorable for corrosion of the propeller shafting and struts. Their fine lines, combined with the high speeds they attain, cause a decided scouring action, by the water swept under their sterns. Paint or bitumastic is scrubbed clean of the shaft soon after its application.

Whether the pitting which takes place on the propeller shafts in question is due to corrosion, erosion or electrolysis is a mooted question. Probably these three enemies are all at work and all more or less cooperating to create trouble. Co-existent with these factors there is present a turbulent condition of the water containing an extraordinary amount of air due to the relatively high speed propellers.

In considering various remedies for the existing conditions it seemed that a rubber covering or sleeve over the shaft would be satisfactory. Rubber will stand hard wear and impact without abrasion (erosion), it will not oxidize or corrode while in water, and it is electrically neutral to metals. It is also a very homogeneous substance and when used as a tight sleeve, prevents water and air from getting to



Close-up photograph of propeller shaft showing effects of erosion and corrosion.

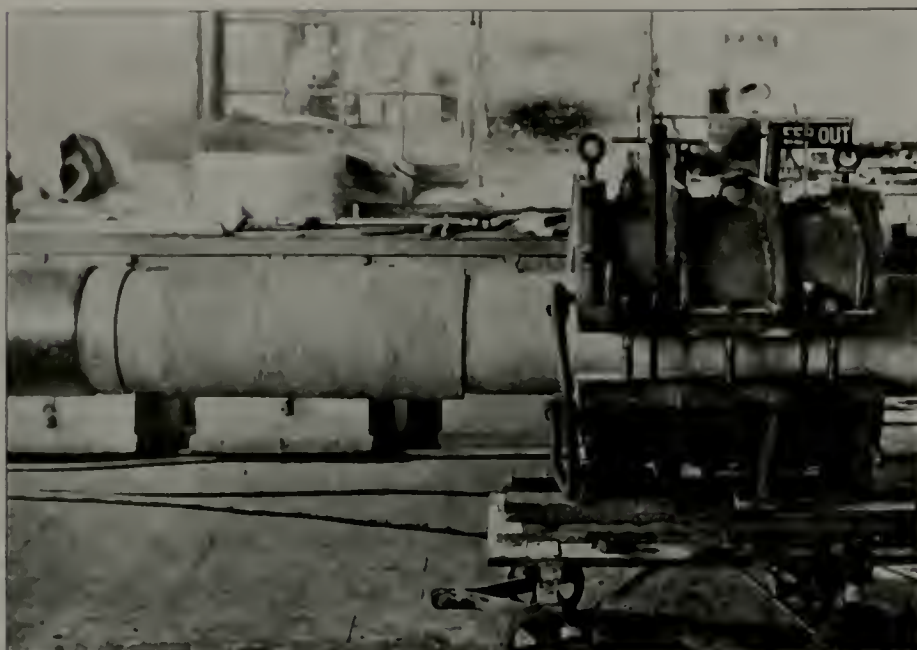
the surface to be protected. The use of rubber sleeves for protecting propeller shafting is not in itself new although it is believed that it has generally been used on the sections of shafting within the stern tube. So far as known, though, the method used by the Mare Island Yard in putting on these rubber sleeves is new.

Cleaning the Shaft

In the case of the first shaft covered the propeller shaft had been removed in order to renew the strut bearing so that the cleaning of shaft and applying the rubber sleeve was carried out in the shop. The cleaning of this shaft was accomplished by putting it in a lathe and running a spring tool with coarse feed the entire length of the shaft. The deep pits were cleaned by wire brushing and filing until the metal was bright.



Propeller shaft of a torpedo boat destroyer showing corrosion and pitting.



View showing shaft with rubber covering in place partially vulcanized and with the vulcanizing mold ready to apply on another section.



View showing vulcanizing mold clamped down on the rubber covering.

No grooves were cut in the shaft to give a special grip for the rubber and experience with the method at Mare Island does not indicate that any special grooving is necessary. Accompanying views show the shaft after it had been cleaned and prepared for application of rubber. Before applying the rubber the shaft was thoroughly cleaned of all grease and oil. It is important that the metal be absolutely bright and free of even a trace of oil.

Vulcanizing Mold

A steam jacketed cast iron mold was made to fit over the shaft and used to apply both heat and pressure to the rubber compound and thus cure and vulcanize the rubber in place. Photographs of the mold and its use are shown.

The mold was made in halves and bored to $\frac{3}{4}$ inch larger than the shaft, so that the walls of the rubber sleeve would be $\frac{3}{8}$ inch thick. The mold was 24 inches long and six operations were necessary to cover the 12-inch shaft.

After the shaft was cleaned it was blocked up with wooden blocks high enough to permit moving the mold along the shaft by means of a hand truck. A coat of rubber cement was then applied to the shaft and allowed to dry. A steam jet was turned into the hollow shaft to warm it up and accelerate the drying.

Rubber Compound

A 40 per cent pure rubber compound was prepared the balance of the compound being reclaimed rubber, powdered chalk, barytes, sulphur and zinc oxide. The Navy Yard possesses its own rubber plan so that the whole process was carried through locally, starting with the raw materials. This compound was then applied to a section of the shaft, covering a little more than the length of the mold. The compound was carefully knened by means of rolls with knurled surfaces for the purpose of driving out all air bubbles or pockets.

The mold was then put in place and the two halves drawn partially together by means of six 1-inch bolts. Steam was gradually applied to the mold until a pressure of about 40 pounds was obtained, giving a tem-

perature of about 260 degrees F. At the same time steam was turned in the shaft so that the curing would take place from both the inside and outside of the sleeve.

Vulcanization

As the vulcanization proceeded the two halves of the mold were tightened up and the surplus of the compound was squeezed out of the ends of the mold. The mold was kept in place for about forty-five minutes, which was the necessary time to thoroughly cure or vulcanize the sleeve. The steel collar on the coupling end of the shaft was undercut at a 45 degree angle and the sleeve at this place forced and vulcanized under the collar.

The ends of the rubber sleeve were wound with two turns of $\frac{1}{8}$ -inch monel metal wire, pulled tightly together with a screwed device so as to tightly clamp the sleeve to the shaft. This clamp was put on primarily to protect the sleeve from damage while handling the shaft during installation but it also served as an added protection against water getting in at the ends of the sleeve. The rubber sleeve appeared though to be very tight and firmly attached to the shaft without this clamp.

Development of Process

The Navy Yard has up to the present time covered four propeller shafts with rubber and has gradually developed the process with added experience. On a subsequent shaft, which had also been removed in order to renew the strut bearing, it was found that the rubber sleeve would not adhere to the shaft though a rough turn had been taken off of the whole length and special efforts had been taken to get the pits clean. It was found in this case that there was enough rust remaining in the deeper pits to cause blisters in the rubber and prevent secure adhesion. The rubber sleeve was stripped from this shaft and the entire shaft cleaned by sand blasting. This process gave a very satisfactory bright surface and no further difficulty was experienced in getting a good bond between the rubber and metal.

On the next shaft which was covered the shaft was cleaned in place by sand blasting and the entire

operation of installing the rubber sleeve was carried out without removing the shaft from the ship. The mold used being of short length is readily portable and easily handled in the dry dock and steam connections for the mold and the interior of the shaft can be made without difficulty.

The installing of a rubber sleeve in place is a very simple project and relatively inexpensive. The sleeve put on in this way seemed to be very satisfactory and the Yard proposes to use this method in the future as standard, only doing the work in the shop when it is necessary to remove the shaft for other reasons.

Covering Struts

The Navy Yard is now proceeding with plans to similarly rubber cover the struts of destroyers. It will probably not be feasible to make a form fitting mold in this case. The compound will be applied as on the shaft but the pressure for forming will be obtained by winding it fairly tight with canvas strips. The temperature for vulcanization will be produced by placing a simple metal jacket around the strut, which can be made fairly steam tight at the two ends, and steam applied directly to the space between the jacket and the rubber. This will provide a portable steam box that can be used in dry dock. Although such an actual covering of struts has not been carried out, the Navy Yard has covered with rubber sample sections of steel of approximately the shape of the struts, using the method as outlined above. Sample rubber coverings have also been made up using a construction similar to a cord tire, and thus obtaining a stronger covering.

The first vessel on which the rubber covering was applied has only been at sea with this rubber sleeve about four months so that no data can be given as to life of the covering. It is believed though that the rubber, in water, will last nearly indefinitely or during the normal life of a vessel. In case there is any damage to any part of the sleeve it is a simple matter to cut out a section of the sleeve and repair it by vulcanizing in a patch.

In cases where a bronze sleeve, of a number of sections, is already installed it will be found that a rubber strip provides a very satisfactory form of joint between the sections. The Navy Yard has made a number of joints in this way, cutting off the bronze sleeve for from 4 inches to 6 inches at the joint, undercutting the sleeve and vulcanizing a rubber sec-

tion of sleeve in place, the procedure and method being similar to that employed in putting on a complete rubber sleeve. The ends of the two bronze sections that are to be joined together are undercut so as to permit vulcanizing the rubber section under the metal.

It is believed that the application of rubber to underwater marine use is still more or less in its infancy. Its use as a bearing substance in stern tubes and struts is now receiving quite extensive service trials on a large number of vessels and its use as a protective covering for shafts has been in service on German ships, at least, for quite a number of years. It is predicted that other applications will be developed as more experience is gained with its behavior under sea conditions.

MEXICO AND UNITED STATES

MEXICO, which looks to the United States to supply most of its commercial needs, is an expanding field for American capital and industry, but a warning of foreign competition is sounded in a report prepared for the Chamber of Commerce of the United States by the American Chamber of Commerce of Mexico.

"Manufacturing in Mexico is increasing," it says, "protected vigorously by import duties of the government and fostered by capital from American, English, German, French, and Spanish sources. This is another kind of foreign competition and one which is growing slowly but steadily. Of the seven hundred million dollars of American money invested in Mexican property (not including Mexican bond investments), \$41,511,500 are today operating factories. About half of this capital is invested in metallurgical plants; and \$19,571,500 is actively employed in factories scattered all over Mexico, which are making iron and steel and foundry products, rubber from Guayule, sugar, shoes, soap, vegetable oils, clay pipe and brick, light chemicals, toilet articles, patent medicines and other medicinal preparations, canned goods and preserves, jewelry, products of the printing press, candy and chewing gum, horse-drawn vehicles, furniture, flour, textiles, tobacco, asphalt paving, leather belts, ready-made clothing, beer, alcohol, and rubber coats.

"While these American factories in Mexico do decrease the importation from the United States in these particular lines, yet they increase the volume of American importations in other lines."



Propeller shaft with rubber covering completed.

DEEP-SEA TRAWLING

A Description of the Novel Apparatus Designed and Manufactured by the Lidgerwood Manufacturing Company for Preserving Uniform Tension on Deep-Sea Trawling Lines

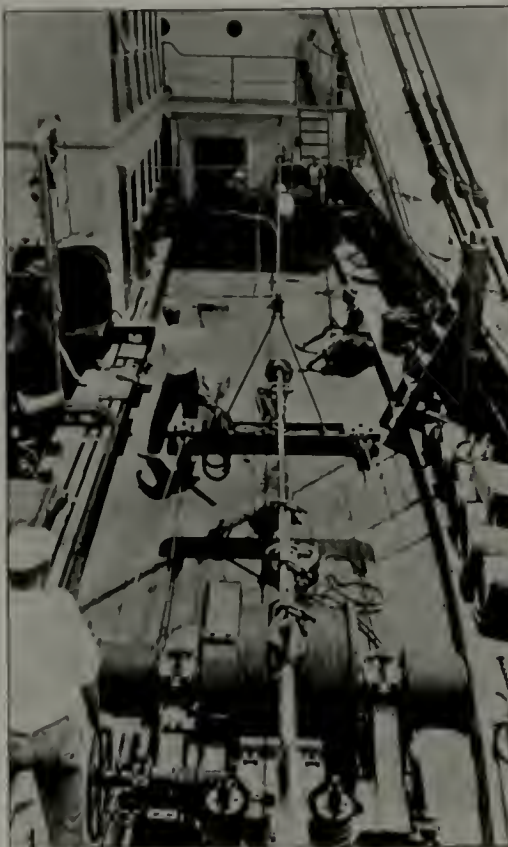
By SPENCER MILLER

Chief Engineer of the Lidgerwood Manufacturing Company

IN the past, experience with deep-sea trawling had presented many serious difficulties due to sudden strains which frequently resulted in the loss of costly equipment.

It was then a full realization of previous difficulties in such deep-sea trawling that prompted Capt. Chas. Yates to seek out a new method to overcome an old difficulty. Accordingly it became the privilege of the writer, who invented the Automatic Tension Engine for similar use some years ago, to develop a special Automatic Tension Engine and cable reeling winch of novel construction which would carry five miles of $\frac{1}{2}$ -inch wire cable.

Already this deep sea trawler has brought up rare and hitherto unknown marine life in that strange part of the Atlantic known as the Saragossa Sea. Under all stresses and strains incidental to trawling in heavy seas, and while the Arcturus was steaming perhaps 3 knots an hour, this apparatus has completely fulfilled the expectations of Dr. Beebe, Capt. Yates and the writer. This equipment, which was designed, manufactured and installed by the Lidgerwood Manufacturing Company, in cooperation with Captain Yates, the consulting engineer of Harrison Williams, chief patron

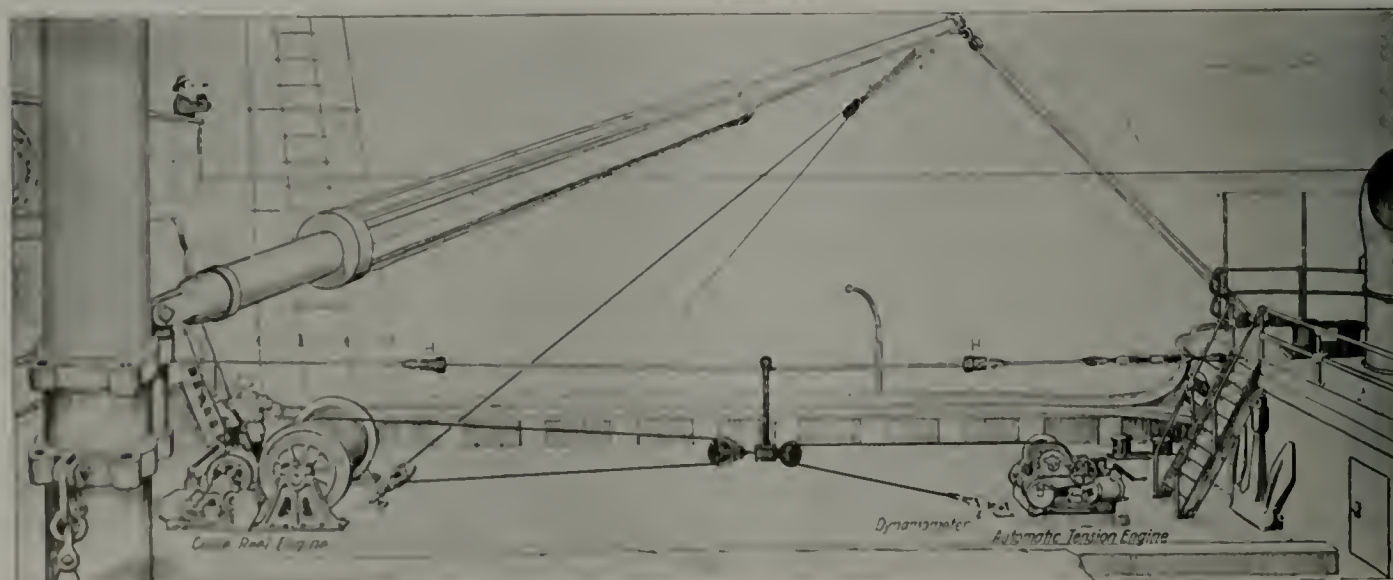


The scientific expedition for exploration of deep-water in the Atlantic Ocean has attracted world-wide attention not only on account of the daring originality of its director, Dr. Beebe, but also on account of the novel character of the apparatus employed in deep-sea trawling. Figure 1 above is a photograph showing the Lidgerwood automatic tension machine and special reeling winch. Figure 2 below is a diagrammatic sketch explaining more clearly the method used.

of the expedition, is somewhat revolutionary in character, and a description may be of interest to those who are following Dr. Beebe's remarkable explorations in the Saragossa Sea in the Atlantic and in the Pacific Ocean as well.

Automatic Tension Machinery

Fig. 1, which may be better understood by examining Fig. 2, a pen and inch sketch, is exceedingly instructive because the photograph shows the deep sea trawling apparatus in action. The Automatic Tension Engine with double $8\frac{1}{4}$ "x8" cylinders is shown in the foreground. The attendant at the left has his right hand on the regulating wheel by which the operator alters the tension capabilities of the Automatic Tension Engine. In the background is the steam reeling winch, the winch man being seen behind the main reel lifting the pump handle lever for winding in the $\frac{1}{2}$ -inch cable. The two men in front of the reel are watching the lay and wiping off the salt water from the cable. Spooling is effected by an extremely simple spooling device which is operated by the man sitting on the deck. This spooling device consists of a guide containing two rollers, which is pulled in one way or the other by a small block tackle. In the middle ground, just in front of the



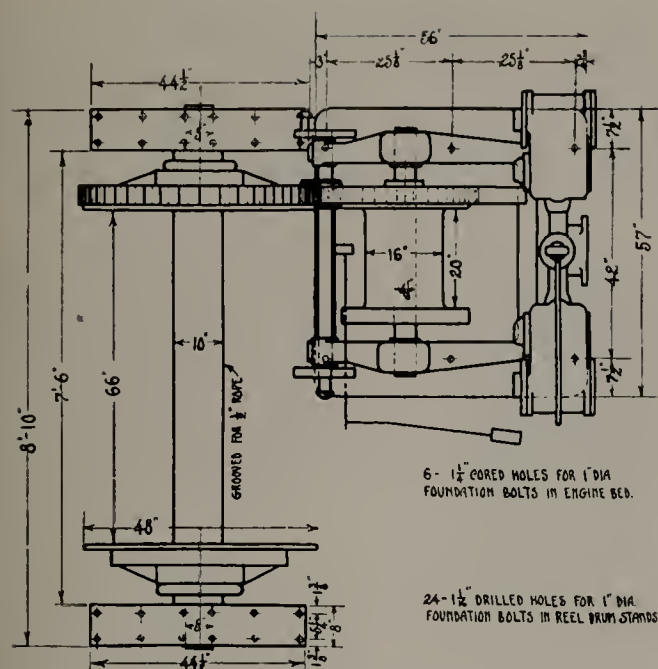


Figure 3. Plan showing dimensions of the special reeling winch.

Automatic Tension Engine, is the traveling carriage carrying at the extreme ends two pulley blocks for two ropes leading from the two drums on the extended drum shaft of the Automatic Tension Engine. In the pen and ink sketch, Fig. 2, this is shown as a single line for the sake of clarity. The boom reaches outboard on the starboard side, and the line leads on a diagonal from a pulley block secured to the deck just in front of the traveling carriage.

Fig. 2 is a pen and ink sketch in the preparation of which it was necessary to exercise some license for the sake of clarity. There was no place where a camera could take a broadside photograph of the entire deck arrangement including both winches, in a single picture. A new deck-house extending from the bridge to the foremast was omitted in this sketch in order to bring the cable reeling winch into the picture. The boom, too, actually used on the starboard side, is shown on the port side in the sketch.

Fig. 3 is a plan of the cable reel winch shown at the left of sketch Fig. 2. The total width of this machine is 8 feet 10 inches and total length about 9 feet. The reel, or drum, is a solid steel barrel 10 inches in diameter. The two steel flanges of the drum are 48 inches diameter and are spaced 66 inches apart. A gear fixed to one of the flanges is driven by a pinion on the crankshaft of a standard Lidgerwood No. 1917 winch, the latter having double $8\frac{1}{4}$ "x8" cylinders. There are no friction drums, no mechanical brakes, nor clutches. The whole operation of raising, lowering and braking is performed with the single reversing and controlling valve operated by the winchman through a pump handle lever.

Referring to Fig. 2, the $\frac{1}{2}$ -inch line on the reel leads to and passes around a pulley block A secured to the traveling carriage B. From there it leads to pulley block C anchored to the deck, then around pulley block D attached to a shock absorbing coil spring attached to one end of the extended boom, and thence down into the sea to the net or drag. The Automatic Tension Engine with double $8\frac{1}{4}$ "x8" cylinders is bolted to the deck abaft the forecastle. Its cable leads from the drum to and around pulley

block E attached to the traveling carriage B, then leading to a dynamometer anchored to the deck just abaft the Automatic Tension Engine at F. The traveling carriage B is free to travel on the main cable G between the limit stocks H and H₁, spaced 50 feet apart.

Lowering the Net

The net is attached to the end of the $\frac{1}{2}$ -inch cable on the deck. It is then hoisted and swung outboard, the operation being performed by the winchman by simply raising his lever and admitting the steam to the winch in the forward direction. The net is then lowered, the winchman simply pushing his lever downwards. The net sinks very slowly in the sea because of the great amount of skin friction of the net itself. Lowering the net is begun by reversing the steam engine, admitting a small amount of steam in the reverse direction, which is accomplished by the winchman by simply pushing down on his lever. To prevent twists and kinks, the $\frac{1}{2}$ -inch cable must not be paid out at a greater speed than that at which the net will sink. In fact it may take two or three hours for a trawling net to sink by gravity to the great depths that are being explored. As the net descends, the weight of the wire rope suspended in the sea increases and the winchman raises his lever and applies steam in the hoisting direction, which acts as a brake to control the speed of lowering.

Penalty for Paying Out Too Fast

If the cable is paid out faster than the net sinks a loop will hang down into the sea, which may twist upon itself. As more line is paid out another loop may form, which may not only twist upon itself but may twist upon the first loop, and so on. All of this, however, could hardly be seen by any one on the deck. Such an accident did occur before the gear was fully mastered, and was observed while raising the net, when the rope emerged from the sea in an almost hopeless tangle. However, this tangled cable was brought on deck and straightened out. So far as known, this only happened once. The net has been frequently lowered to the bottom of very deep seas and has brought up a great number of most interesting specimens of fish that inhabit the ocean depths.

Operation When a Hang-up Occurs

Assume that the trawling or dredging operation is going on at a speed of 3 knots (about 300 feet per

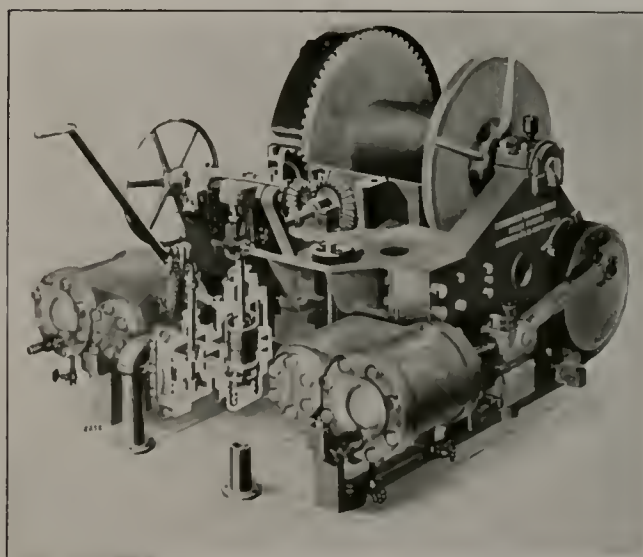


Figure 4. View in partial section of automatic tension winch.

minute), the traveling carriage B held adjacent to the forward limit stop H, the Automatic Tension Engine adjusted to automatically yield and pay out at 10,000 pounds. The dynamometer shown at F, while it has nothing to do with the regulation of the Automatic Tension Engine and was installed for scientific observation, will record the tension at all times, which might in this instance indicate a tension of 9000 pounds. At any moment the net may foul on a ledge or a bit of wreckage sufficiently to cause a hang-up. With the net held fast and the ship moving 3 knots, the tension in the line would rapidly increase, and every man on deck would be informed of the hang-up as soon as the tension rose above 10,000 pounds because the Automatic Tension Engine would then automatically pay out and the traveling carriage B would start to travel aft at approximately the speed of towing, assumed to be 3 knots or 300 feet per minute. The traveling carriage B moving aft 50 feet, would pay out 100 feet of $\frac{1}{2}$ -inch cable, automatically, in about 20 seconds of time. The winchman attending the cable reel engine has, in 20 seconds, time enough to rise from his seat, push down on the pump handle lever, and pay out line under perfect control at sufficient speed (about 300 feet per minute) to prevent rupture. At the beginning, the winchman should pay out fast enough to permit the traveling carriage B to move forward to the limit stop H. It will therefore be noted that the operation of paying out the first hundred feet is entirely automatic, but after this the operation of paying out becomes a function of the main cable reel, which is paid out manually. During this 20 seconds period when the Automatic Tension Engine is paying out its 100 feet, orders may be given to the pilot to swing his ship and the man in the engine room signalled to slow down. The Arcturus would then make a half swing, steaming slowly in the opposite direction, during which period the winchman would wind in as long as slack existed. If the cable be wound in too fast, the tension might increase beyond 10,000 pounds, the Automatic Tension Engine would again yield another 100 feet, which of itself is a warning to the winchman to wind in slower. By this process the net should clear and be hoisted above the bottom of the sea, after which the ship may return to its original course and the net again be lowered and the dredging operations continued. Should any fear exist that the net was damaged, it could be hauled above the sea for examination and repair.

Automatic Tension Engine

Fig. 4 shows the 8 $\frac{1}{4}$ "x8" Automatic Tension Engine exhibiting the controlling valve in cross section. This is the heart of the control mechanism. The main drum shaft of the Automatic Tension Engine is journaled in a frame free to rock, to a limited amount about the crankshaft as a center. This rocking frame is restrained by two heavy coil springs similar to car springs. The rear end of this rocking frame is connected to the valve rod of the controlling valve. Whenever the tension in the rope increases, the rear end of this frame will rise, the main valve will be lifted, and the steam pressure reduced. Should the tension rise above 10,000 pounds an auxiliary valve in contact with the main valve will break away for an instant and spill the compression in the cylinders into the exhaust passage. This is the work of an instant of time, when the two valves will again seat together. As long as the tension exceeds 10,000 pounds the pay-out will continue, and whenever necessary the com-

pression will be spilled into the exhaust as indicated above. The automatic pressure controlling valve, therefore, consists of two parts, the main valve and the auxiliary valve, the auxiliary valve being seated to the main valve. Conversely, when the tension decreases, the drum frame rocks back, the valve opens, steam admitted to the cylinders until the normal tension is restored.

Automatic Tension Engine Acting Alone

The main drum of the Automatic Tension Engine carries 1500 feet of $\frac{1}{4}$ -inch wire rope, and may be used alone for relatively shallow trawling. In this event the cable reel engine and the traveling carriage B are not employed. The $\frac{1}{4}$ -inch rope would then lead from the drum of the Automatic Tension Engine to and around pulley C anchored to the deck just forward of the cable reel engine, and thence to and over the pulley D attached to the end of the boom, and then drop into the sea.

It may be of interest to know that when this problem was presented to the Lidgerwood Manufacturing Company, Captain Charles Yates asked for an Automatic Tension Towing Engine to hold 30,000 feet of $\frac{1}{2}$ -inch wire cable, but no such towing engine has been developed and it would require several months to produce such a machine. The design shown in Fig. 1 is therefore a compromise—the only plan that could be had in the time available. The Automatic Tension Towing Engine is a standard machine, while the cable reel engine was special in so far as the reel was concerned.

In former expeditions it was found that in winding a great length of rope under heavy tension there was a great pressure on the drum itself but a far greater pressure on the flanges, tending to spread them apart. With this knowledge in hand, this particular drum, or barrel, was made of solid steel 10-inch shaft, which became the drum of the engine, and to which were fixed cast steel flanges heavily braced to take the thrust arising from the crowding of the rope at the ends of the drum, which crowding disposition may be eight or ten times the tension in the line itself.

FRUIT EXPORTS

AMERICANS might, in the bosom of the national family, speak flippantly of the "poor" prune, but it remains, none the less, one of the toplineers of foreign trade, which shows conclusively that it is held in high esteem throughout the world.

An analysis of America's export trade for 1924, made by the Department of Foreign Commerce of the Chamber of Commerce of the United States, shows that last year 220,912,000 pounds of dried prunes were shipped to other countries—nearly double the previous export record established in 1921—with a value of \$13,218,000.

The prune goes far in paying for America's bananas of which \$22,074,000 were imported in 1924, also a new high record. What is left over can be more than paid for by exports of apples and oranges. Apple exports in 1924 reached another record—1,881,000 barrels and 6,719,000 boxes, valued at \$24,287,000. Orange exports also reached a new high record of 2,564,000 boxes, valued at \$8,685,000.

New quantity records were also established during the past year for exports of American agricultural machinery, typewriters, adding and calculating machines, automobiles, and moving picture film. Of the last 33,797 miles were sent abroad.

PILING FOR MARINE STRUCTURES

This Interesting Paper Analyzing the Factors in Determining Selection of Materials for Waterfront Foundation Construction Was Read Before the Pacific Coast Association of Port Authorities at the Twelfth Annual Convention Held in San Francisco, June 18-20

By G. F. NICHOLSON, Harbor Engineer, Port of Los Angeles

THE most vital part of waterfront terminals is the bearing piles supporting the wharf and super-structure, and it is therefore essential that great care be exercised in selecting foundation piling for these facilities.

Piling divide themselves into two general classes, i. e., treated and untreated wooden piling, and concrete piling.

Wood Piling

In North America, wooden piling are in general use in harbors relatively near the timber producing sections. While a great many new methods have been proposed in past years for the protection of wooden piling against marine borers, creosote has become almost universal in use and has given far better results than any other method of protection. In the above harbors, piling impregnated with creosote, when properly pressure treated, handled and driven, give a normal life of from 20 to 30 years. Untreated wooden piling are rarely ever used in salt water harbors except for temporary construction work, but are used almost exclusively in fresh water harbors and rivers where the marine borers are not active. The latter piling are usually cut off at low water, below which piling are not subject to decay, and are capped with concrete to support the sub-structure.

The chief danger to treated piles is that the treated shell may split or be punctured from handling or driving, thereby opening channels for the marine borers to reach the untreated section of the piling. This is a common occurrence in marine structures and too much emphasis cannot be laid upon careful handling and driving of treated piling. Cant-hooks should not be permitted in the towing and booming of creosoted piling, and in driving, jetting should be insisted upon but not to the point of danger for the proper foundation of the bearing piles.

The elimination of breeding grounds for marine borers is important and it may be of interest to know that it is the policy of the Los Angeles Harbor Board to prohibit the use of untreated piling in the Los Angeles Harbor, which is



A Los Angeles plant for the manufacture of reinforced gunite piling.

bound to be a factor in obtaining longer life of the creosoted piling used in this harbor.

Concrete construction is extensively used in European ports and in this country where permanent structures are being built. There are many types of concrete piles, the most general one in use being the square reinforced precast type made by pouring the pile in a horizontal position. The other general types of concrete construction may be classified as precast treated piling; precast armored piling; gunite piling; precast sectional piling and concrete cylinders cast in place.

Combination piles of wood and concrete have been used in some localities, but chiefly on the Pacific Coast, in the case of untreated wooden piling surfaced with gunite at the Port of Tacoma and concrete jacketed wooden piles at the Port of San Francisco.

Concrete in Sea Water

Although concrete is considered more or less permanent by most people, there are objections to the use of concrete in waterfront structures, and it is very important that the concrete be of the best quality and properly protected. The general causes of failure of concrete in sea

water may be listed as to their importance as follows:

1. **Chemical Action of Sea Water on Concrete**, the chief cause of disintegration, is caused by the free lime in the concrete being attacked by the sulphates in the sea water and in time the entire concrete structure may be weakened to such a point that failure may ensue.

2. **Oxidation of the Reinforcing Steel** is a common cause of failure. The steel is slowly fed oxygen by the circulation of water from the section of the pile submerged, the water being drawn up into the pile by capillary attraction to the portion exposed to the air where the water is constantly evaporating. The action is very slow but continuous and finally results in the corrosion and expansion of the steel, finally cracking the concrete. There are other contributing factors which may influence this type of failure, the chief one being electrolysis.

3. **Freezing in Colder Climates** plays a very active part in concrete failures. Water entering crevices and openings in porous concrete freezes, causes small particles to be crushed or sheared off from the resulting expansion.

4. **Mechanical Abrasion** from float-



Driven Raymond concrete piles, Berth 41-43, Los Angeles Harbor.

ing ice and debris of all kinds has proved to be very harmful to concrete piles and should be prevented as much as possible.

5. Wave Action has a very slow but continuous action on the concrete. Foreign particles held in suspension exert a continuous grinding on the concrete surface and there is also a hydrostatic pressure temporarily set up on the water confined in the connecting voids of the concrete.

Concrete Piling

There has been a great difference of opinion relative to the proper use, length of life, methods of manufacture and permanence of the several types of piling now in use. The determining factors in the selection of piling may be summed up as follows: First, relative permanence; second, initial cost and maintenance charges; and third, design and strength. The first, permanence or durability, is by far the most important while initial cost and maintenance, together with strength of piling are of lesser importance. The matter of strength can be insured by proper engineering design, while a reasonable cost of such piling can be obtained by competitive bidding on the manufacture and driving of piling. Durability, however, can only be determined by a time test and it is the opinion of the writer that we should be conservative and not experiment with various untried types of piling, but profit by the experience of the older ports, particularly in Europe where concrete construction has been used for many years.

The lasting qualities of concrete in sea water will depend upon a few general and fundamental principles which are usually more or less adhered to. They are: first, cement of the best quality; second,

proper aggregates well graded; third, proportions which give the greatest density and the least permeable concrete; fourth, placing the steel so that there is a sufficient concrete protection from external forces; and fifth, surface protection of the pile from at least lower low tide to and including the underneath portions of the sub-structure with a suitable waterproofing preservative.

Waterproofing Concrete

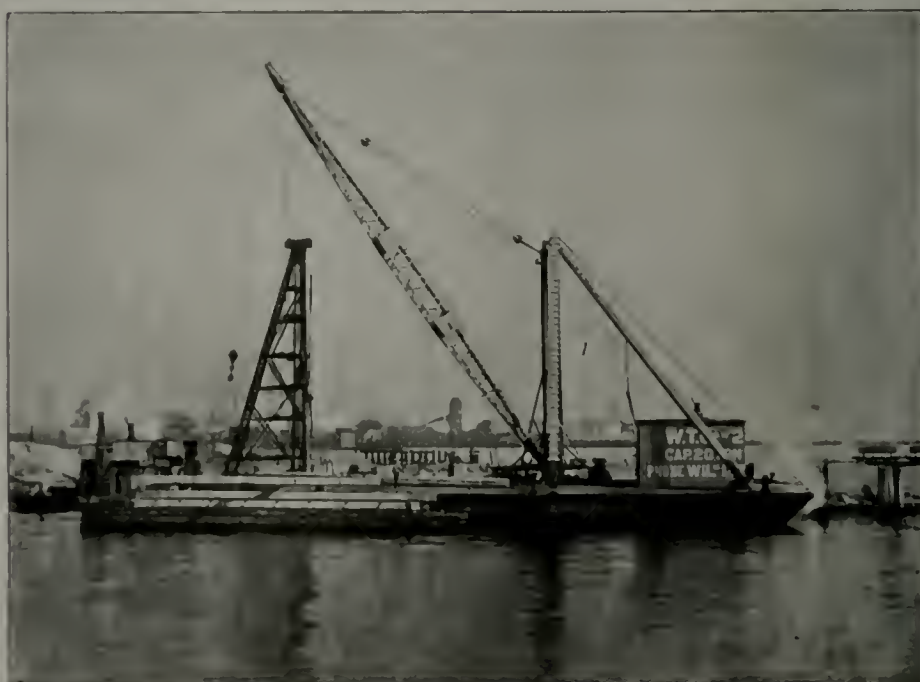
Until recently, concrete piling have not been protected from deterioration by means of waterproofing, but on account of many failures of concrete piling, particularly above the low water line, it is recognized by terminal engineers with experience in this line of construction work that concrete in sea water should be properly protected with some waterproofing of good

quality in order to insure long life even though the concrete may be very dense.

In some cases precast concrete piles are pressure treated with asphaltum much the same as wooden piles are treated with creosote, while in other cases piles are painted with a preservative before driving. Piling that are driven without treatment should be sprayed or painted together with the underneath side of the deck in order to prevent deterioration by salt water entering beyond the surface of the concrete.

In the construction work at Los Angeles Harbor, it has been found advisable to use concrete piles under the shed and concrete deck with an apron wharf of wooden construction. This construction gives a permanent piling under permanent construction and easy access for any replacement or changes in the front of the wharf. Oil wharves, however, are constructed in most cases entirely of creosoted piles on account of their narrowness and their being open wharves. It is believed by the writer that eventually when Pacific Coast ports are on a firmer financial basis, we will use a still more permanent type of construction in the form of a retaining wall at the face of the wharf and entire solid filled piers, which will materially reduce our maintenance charges.

At present, exhaustive studies and tests of various types of concrete piling offered the Los Angeles (Continued on Page 427)



Derrick barge and pile driver handling and driving precast reinforced concrete piles at Berth 230, Los Angeles Harbor.

ARC RADIO TRANSMITTERS FOR MARINE SERVICE

ALMOST from the time of its discovery, radio or wireless telegraphy has been recognized as a very important and practical method of establishing communication between two points both on land and on water without the use of physical metallic conductors such as required for land wire telegraphy or submarine cables. Possibly one of the most important applications of radio communication is that for marine service, by which communication is established with ships many miles from shore or between ships at sea.

Radio transmitters may be broadly divided into two types, damped wave or so-called spark transmitters and undamped or continuous wave transmitters.

Radio or wireless telegraphy was first accomplished with damped wave or spark transmitters. Recognizing the importance and value of this new method of effecting communication, it was only natural that this type of transmitter should have been developed to a certain state of perfection before the advantages of the more desirable undamped or continuous wave transmitters were known. Greater selectivity or sharpness of tuning and a greater communicating range for a given power are the principal advantages of undamped or continuous waves for radio communication.

Continuous Wave Transmission

The advantages that would result from the use of continuous waves for transmitting were realized in the early development of the art of radio telegraphy. Appreciating these advantages, many scientists interested in the art applied their knowledge and ingenuity in endeavoring to develop and produce a suitable continuous wave transmitter. It was not until the discovery of the fundamental principle of the oscillatory arc by Valdemar Poulsen, a Danish physicist, that a successful method was produced. The development of this principle produced a very simple, practical and efficient continuous wave radio transmitter that has held an enviable position in the radio art.

Using the principle of the Poulsen arc, intensive experimental work was undertaken by the Federal Telegraph Company, which resulted in the development of the Federal arc radio transmitter, which has been supplied in all sizes varying from the small 2 kilowatt transmitter primarily used for ship to shore communication, to the high power installations of 500 kilowatts and 1000 kilowatts for long distance communication.

The Federal Telegraph Company has been the pioneer in continuous wave radio telegraphy and was the first to prove the advantages of this type of radio transmission by the tests conducted from the Arlington, Virginia, station with a Federal arc radio transmitter, with the result that the Navy Department adopted the arc transmitter for use in its extensive communicating system.

Federal arc radio transmitters for shipboard installations are designed and constructed with a complete knowledge of the requirements to be fulfilled by this class of service. The inherent simplicity of the arc transmitter makes it possible to place the equipment in the hands of an operator who need not have such

an extensive knowledge of the equipment as is necessary with certain other types of transmitters. Operators who have had no experience with arc transmitters can with a few simple instructions operate the transmitter and maintain the equipment in operating condition. Federal arc radio transmitters do not require specially trained operators.

The maintenance cost of an arc transmitter is extremely low, the renewals being the inexpensive carbon and copper electrodes of the arc converter, which need only be replaced after several weeks of service.

It is essential that radio transmitters on shipboard should be capable of being placed in operation without delay. This is particularly important in case of an accident at sea when it becomes imperative that a call for assistance be sent out immediately. A Federal arc radio transmitter as supplied for this class of service can be placed in operation within ten to twenty seconds. A little more time is required to start the arc the first time after the arc chamber has been opened for cleaning or for inspection or replacement of the electrodes. After the arc has once been started and operated a few minutes the proper conditions are established in the arc chamber so that the transmitter can be again started and full radiation obtained within a few seconds.

Communication Range

The factors that affect the range of communication are wave length, antenna current, effective height of the transmitting antenna and probably most important, the time of day and atmospheric conditions when transmission is undertaken. An arc transmitter delivering the same current to the same antenna as any other type transmitter on the same wave length will establish communication over the same distance.

Arc and tube transmitters are not rated on the same basis. Federal arc radio transmitters are rated by the input to the transmitter. For example, a 2 kilowatt arc transmitter is designed to operate on a direct current power input of 2 kilowatts. The output of the transmitter depends on the characteristics of the antenna system. For transmitters of this rating the output is from 25 to 30 per cent of the input. Tube transmitters are rated by their output.

Because of the different methods of rating tube and arc transmitters, it is very easy for someone comparing the performance of these two types of transmitters to be misinformed unless he is cognizant of the basis on which the transmitters are rated. Federal arc transmitters are liberally designed and can be overloaded from 50 per cent to 100 per cent during periods from one to two hours without danger. This is a very important advantage when additional power is required to establish communication over unusual distances or through atmospheric interference.

A large number of vessels, both government and commercial, are equipped with Federal arc radio transmitters, which are giving most reliable service. Quite remarkable results are obtained with the Federal 2 kilowatt transmitters which are in service and which do not incorporate the latest developments and improvements. It is nothing unusual for a 2 kilowatt Federal arc radio transmitter to establish communication over distances from 1000 to 2000 miles in the day-

time and from 3000 to 5000 miles at night. The U. S. Army transport Thomas on which a Federal 2 k.w. arc transmitter is installed maintains communication with the Pacific Coast several days out of Honolulu on the way to Guam and the Philippine Islands. Communication over a distance of 5000 miles is quite common.

Improved Type

As a result of the experimental work undertaken during the past two years, the engineers of the Federal Telegraph Company have developed an improved 2 kilowatt Federal arc radio transmitter for marine service. In addition to being more efficient, the equipment requires less space for installation. The complete equipment includes a small synchronous spark transmitter, which operates directly from the ship's power supply for operation on 600 and 706 meters for communication with ship and shore stations not equipped to receive continuous waves. This low power spark transmitter also serves as an auxiliary transmitter for operation from a storage battery in accordance with government regulations. This auxiliary transmitter being of the synchronous gap type produces a clear signal requiring sharp tuning and does not give broad interference.

This simple and compact transmitter can also be separately installed on vessels of coastwise trade where long distance communication is not required

and very satisfactorily fulfills all requirements on boats where only a limited power supply is available.

The complete transmitter consists of five units.

- (1) Auxiliary spark transmitter panel which contains the complete equipment.
- (2) The arc panel which mounts the loading inductor, signalling system, wave changer, send-ground-receive switch and starting switches.
- (3) The arc converter.
- (4) Cooling water tank.
- (5) The motor generator set.

Both the main and auxiliary transmitters are equipped with a wave changer which readily permits the use of any one of four different wave lengths. The units have been so designed that the installation and tuning of the equipment is simple and requires but a short time.

The remarkable results and satisfactory service that are being obtained from the large number of Federal arc radio transmitters are evidence of the reliability of the arc transmitter for marine service. The improvements that will be made from time to time as a result of further experimental and developmental work will maintain Federal arc radio transmitters as the most efficient and practical type of continuous wave transmitter for both marine service and long distance radio communication.

LLOYD'S NEW RULES FOR YACHTS

AN event of some importance in the yachting world is the adoption by the Committee of Lloyd's Register of Shipping of a new set of rules for the construction and classification of wood yachts.

It is close upon fifty years since Lloyd's Register took up the classification of yachts, in response to the appeal of a deputation of yachtsmen, headed by Mr. Frank Willan, and which included the late Mr. Dixon Kemp and the late Mr. Benjamin Nicholson.

The reason why Lloyd's Register was then asked to undertake this duty, was because of its unique position in the shipping community. The society is a voluntary association of underwriters, shipowners and others, which exists for the purpose of surveying and classifying the shipping of the world. In all essentials it is a public body, having no pecuniary or commercial purposes to serve beyond those of the public interest. The whole of its revenue is devoted, in the interest of shipping, to extending its staff of surveyors and perfecting its organization.

In the intervening years, many important yachts have been built under the survey of the society, whose rules have been amended from time to time in consequence of the development of yacht design and construction.

The entire revision of the rules in order to embody the most modern practice has been in hand for some time, and the committee of the society have had the advantage of the valued co-operation of several of the leading yachtsmen, yacht designers, and yacht builders. As a result of several meetings at the offices of Lloyd's Register, a remodeled set of rules has been agreed upon, and these have just received the approval of the general committee of Lloyds' Register, and will be published shortly.

The adoption of these rules, representing as they do the combined experience of yacht designers, builders and owners, should result in nearly all wood yachts being built in future in accordance with the society's requirements, and under the inspection of the society's surveyors for classification in Lloyd's Register of Yachts.

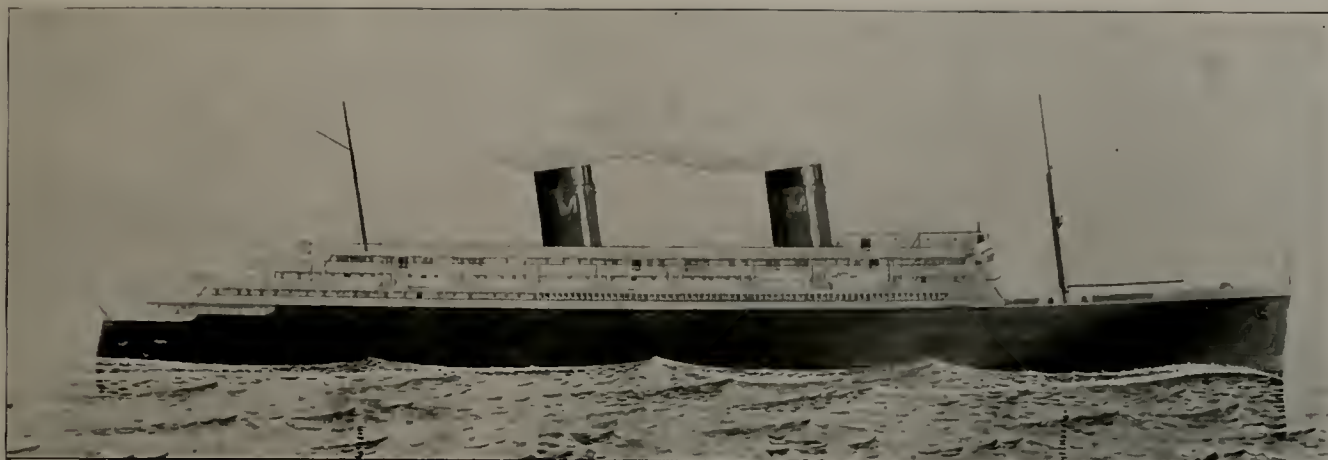
It is, however, realized that there is a diversity of practice in constructing this type of vessel, and that there is ever a tendency towards improved design and construction.

While the rules are intended, and are believed, to represent a sound standard and basis of strength, the committee will always be prepared to consider on their merits proposals of designs which may not be quite in accord with the mode of construction represented in the rules.

It is understood that the Yacht Racing Association has decided that so far as racing yachts above 14 metres are concerned, it will be compulsory in future for all such vessels to be classed A1 according to these rules.

In this connection it may be mentioned that yachts for racing in the International Rating Classes have been required, for some years, by the International Yacht Racing Union as well as the Yacht Racing Association, to be built according to the Rules for Scantlings prepared at the request of the Council of the International Union.

In the original preparation of these rules and in subsequent revisions, Lloyd's Register has taken a prominent part, and between 400 and 500 racing yachts of various nationalities have been surveyed during construction by surveyors to Lloyd's Register and classed by the society since the rules were originally framed in 1908.



Steamer Malolo as she will appear when finished.

REDUCTION GEARS FOR THE MALOLO

THE contract for the four sets of reduction gears for the steam turbines of the steamship Malolo has been awarded to the De Laval Steam Turbine Company of Trenton, New Jersey. The Malolo is being built under the direction of Gibbs Brothers, Inc., at Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia, for the Matson Navigation Company. She will be the largest and fastest high-powered passenger steamship ever built in the United States.

The power plant of this speedy express liner will consist of two multiple stage Cramp-Parsons turbines, driving twin screws and developing a total of 25,000 horsepower. This power will be sufficient to drive the hull through the water at 23 knots and to maintain a sea speed of 22 knots.

Each turbine will consist of four stages, one high pressure, two intermediate, and one low pressure. Each

of these drives its own pinion and each pair of pinions meshes with a large gear, making a total of four gears and eight pinions. Each gear set will be housed in a separate casing. The gearing will be of the double helical type, the gear face being divided into halves with right and left hand teeth.

These are said to be the largest gears for marine use yet constructed in the United States, the pitch diameter being 140 inches and the width of working face 57 inches.

The gear wheels will have cast iron centers with forged steel rims shrunk on and secured by screw pegs. The gear rims will be of forged carbon steel, double annealed with a tensile strength of 65,000 pounds, elastic limit 35,000 pounds, and elongation in two inches of 32 per cent.

The pinions will be nickel steel forgings, oil quenched and tempered and must show a tensile strength

of 90,000 pounds, elastic limit of 60,000, and elongation in two inches of 25 per cent.

The approximate revolution per minute when the four sets of turbines are developing a total of 25,000 shaft horsepower is as follows:

	R.P.M.
High pressure turbines.....	1450
First intermediate pressure turbines	1450
Second intermediate pressure turbines	1450
Low pressure turbines.....	1450
Propeller (about)	121

The factor of safety will be at least five.

The lubrication of the gear teeth will be by means of a series of spray nozzles arranged to deliver oil at the point where the driving teeth enter in engagement when the gear is running.

The Malolo will be put in service on the San Francisco-Honolulu run in the spring of 1927. The speed of 22 knots will enable her to make the round trip in 8 days, cutting by 4 days the fastest time of any passenger vessel now on the run.

THE PANAMA MAIL

An interior view of the new home office of the Panama Mail Steamship Company at No. 2 Pine street, San Francisco. This view is taken from the rear of the office. The freight and passenger counters may be seen at the left in the rear of the picture. The Panama Mail organization is composed of steamship men of long experience and is functioning smoothly under the new conditions.



HAVISIDE DERRICK BARGE No. 4

The Pioneer Rigging and Ship Chandlery Firm of San Francisco Celebrates California's Diamond Jubilee by Building Most Complete and Most Powerful Wrecking and Lifting Barge on the Pacific

ON the Pacific Coast today the rapid growth, development, and progress of shipping are causing a revolution in material handling methods in our harbors. Keeping pace with this advancement in harbor facilities, the Haviside Company of San Francisco has designed and built a steel barge of their shear leg derrick type for heavy lifting, salvaging, and wrecking purposes that will be of the greatest service to the harbor of San Francisco and to the entire Pacific Coast.

Heavy lifting in former years was accomplished by employing the use of sheer leg equipment that could not be transported from pier to pier. Ships, consequently, suffered a great loss of time and money, because of the inaccessibility of this equipment.

In the last twelve years a great transformation from old and inefficient methods to new and efficient methods has taken place in connection with derricks on this coast. The stationary sheer legs have been replaced by floating sheer leg derrick barges; first conceived and designed by the Haviside Com-

pany of San Francisco, who have been operating three derrick barges since that time.

With the increasing tonnage of the port of San Francisco and the necessity of aiding stranded vessels, the Haviside Company has just com-

pleted the new steel derrick and wrecking barge referred to above, which was designed and built under the personal supervision of H. T. Haviside, president of this widely known firm.

As the structure is of very massive proportions and great strength, it is thought that a general description will be of interest.

The barge is entirely of steel; length over all, 125 feet, beam 48 feet, and depth of hold 12 feet. There are three longitudinal trusses and three water-tight bulkheads athwartships in the hull. The ballast tanks as situated forward and aft and have a capacity of 260 tons at each end. Below deck is the steam plant, which consists of two Scotch boilers especially built by the Eureka Boiler Works, San Francisco.

A general idea of the massiveness and rigidity of the A frame can be obtained from the illustrations herewith. This frame is 81 feet high above the deck, and its weight exceeds 45 tons. The swinging boom supported by the A frame is 106 feet long, with a diameter of 41 inches at its greatest girth, and a weight of 30 tons.



Haviside Derrick Barge No. 4.



THE A FRAME

This structural member supports and distributes the strains of lifting and swinging heavy weights on the floating derrick barge. Our snap shot, taken during construction, by a Pacific Marine Review staff photographer, gives a very graphic idea of the massive nature of the construction and the ample bracing employed. The factor of safety is 5 or more to 1 for each member of this structure.

A PRACTICAL TEST

The first job to be undertaken by the Haviside derrick barge No. 4 and one which proved a very practical test of this equipment was the lifting and delivery of four large Scotch marine boilers from the wreck of the Associated Oil tanker, Alden Anderson. This vessel, which burned at the pier at Avon, was towed into the deep water of the bay and sunk. No. 4 is here shown ready to unload the boilers at the plant of the Moore Dry Dock Company, Oakland, California.



All running rope on lifting gear was specially made for this job by the United States Steel Products Company, which fact insures its trustworthiness.

Built by the American Hoist and Engine Company, the hoisting and swinging engines are the latest and best available.

Included in the wrecking equipment are four 14-inch by 14-inch double cylinder steam towing engines, two steam anchor windlasses, chains, anchors, pumps, and all the

latest improved wrecking and hoisting gear. Numerous pumps, a light plant, water and fuel tanks are also below deck.

Economical and efficient handling of unusually heavy machinery and other weights for water shipment is made possible by the great lifting power of this barge. With the boom at an angle of 45 degrees, the block and lifting falls hang vertically 36 feet outboard from the side of the barge and the boom can swing clear 180 per cent. In this

position on test one hundred tons deadweight were easily handled both in lifting and swinging. The large radius of action on heavy weights makes this barge very valuable for swinging large massive machinery or heavy blocks of metal into ships' hatches. This feature is also of great importance in placing and picking up moorings.

The initial achievement of Haviside derrick barge No. 4 was the lifting and delivery at Oakland of four Scotch marine boilers from the wreck of the tanker Alden Anderson—which had sunk in the bay off Avon some months ago. These boilers weigh 75 tons each.

Included in the organization of the Haviside Company are ship chandlery, rigging, sail loft, and canvas departments, each complete in itself and each under the direction of a competent expert. In each department there is carried a large and complete stock of material and equipment to cover all the needs of Pacific Coast shipping. The services of each department are promptly available at all times.

This latest addition to the Haviside Company's exceptional equipment, together with the complete facilities of this firm in every department, places at the service of the marine interests of San Francisco and adjacent Pacific Coast ports, machinery and experience second to none.



Haviside Derrick Barge No. 2 lifting a boiler aboard the Japanese freighter Shimpō Maru.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

LOS ANGELES BOAT YARDS BUSY

TO build and keep in repair the fleet of workboats making Los Angeles Harbor their home port requires many establishments. Pacific Marine Review gives below a sketchy account of the principal ones, with brief comments on the class of work done, personnel, etc.

The Seacraft Corporation has a well equipped yard specializing in power craft but taking on sailing boat jobs as well. R. B. Hawthorne is general manager and Herbert Matson superintendent. Last year they turned out ten power craft and one sloop yacht, besides doing a good business in repair work. The yard has four ways able to handle small craft, with a large building loft for new work.

Fellows & Stewart have made an



The framing for a 96 foot boat for tuna fishing on the ways at Al Larson's yard.



A Los Angeles harbor taxi on the ways at the yard of the Seacraft Corporation.

enviable reputation in speed boat and yacht work in addition to many heavy duty boats and water taxis. The company is headed by Joseph Fellows, president; Victor P. Stewart, vice-president and secretary; Homer H. Evans, general superintendent; James M. Shuck, sales manager, and W. B. Hipple, superintendent of machinery. This yard is working at full capacity, has fourteen speed boats under construction and contracts signed up to insure full work until next April, this in addition to the usual repair jobs coming in.

Al Larson's is the brief but complete name by which the yards at Terminal Island are known. A. Larson, the proprietor and very active

manager, handles his considerable business himself. A first-class boat builder of old Scandinavian stock, he started a small place in San Pedro in 1903, and by hard work and first-class jobs done has built up an extensive yard. At present he uses eleven marine ways for repair jobs, with a big covered workshop and mill. Two heavy ocean-going tuna fishing boats are in frame and being rapidly planked. They are 96 feet in length, 20 feet 6 inches beam, with 11 feet 8 inches holds. They are very strongly built, powered by 200-horsepower Western-Enterprise diesel engines built at Los Angeles, and will develop easily a sea speed of 10 knots. Optimists say 11, but



Sailing yacht on the marine railway and skipper of this department on the board walk, Fellows & Stewart Yard.



A few Los Angeles boat builders of the Seacraft Corporation.

the first figure is Mr. Larson's opinion. Some eighteen shipwrights are steadily employed in the yard, besides other artisans. The personal attention of Mr. Larson is given to all work, and only the best goes.

Garbutt & Walsh have a yard of considerable size, but not kept in prominence by signs. Except by water it is a bit difficult to reach, but is ideally located for its purpose. It is practically a one-man yard, "Matt" Walsh being on the job at all times as general manager. Little or no new work is done there, but repair work in plenty. During the past month 261 boats were at

the yard under repairs. There are twenty-one sets of marine ways. Two of these are very sturdy, and weights up to 800 tons have been hauled out. A 50-ton derrick crane on the pier head makes the handling of heavy machinery very easy. Much of the equipment of this sort has been built by Mr. Walsh to meet conditions that arose in the development of the yard. The two partners in the firm started and still operate the San Pedro ferries, and having at times experienced difficulty in getting their repair work done commenced to do it themselves, and in 1916 the present plant began to take shape.

Workboats at Los Angeles

THE volume of maritime business in Los Angeles Harbor is of a magnitude surprising to visitors. While an immense part of it can be credited to the petroleum interests, the amount done by workboats and barges is also worthy of note. A Pacific Marine Review representative lately paid a visit to that locality. Many years ago he was employed on a steamer calling at the then port of San Pedro. At that time it was of small consequence. A few lumber schooners and a handful of fishing sloops were about all the craft seen. There was no breakwater or even harbor of much account.

A few years ago the fast growing city of Los Angeles annexed San Pedro and Wilmington, as a water outlet for the lusty southern metropolis was urgent. At this writing a most marvelous change is apparent. The old time sleepiness of San Pedro has been shaken off. In place of a few shaky wooden wharves with only

a few feet of water alongside are miles of concrete docks and warehouses with plenty of water depth for big ocean liners. The few fishing and pleasure boats and one or two tugs have been replaced by a fleet of thousands, for as a matter of government record there are 2328 craft of the workboat type registered in the Los Angeles Custom

House. Following is a list of the principal firms who operate the sort of craft covered in this department of Pacific Marine Review:

Wilmington Transportation Co.—6 large tugs, 10 lighters, 3 derrick barges.

Red Stack Tug Co.—5 large tugs, 1 lighter, 1 derrick barge.

H-10 Water Taxi Co.—13 speed boats, 4 heavy duty boats.

Seacoast Canning Co.—13 large fishing boats.

Pacific Marine Products—1 heavy tender or "mother boat."

Toyo Fisheries Co.—3 tenders, with 5 more building.

Coast Fishing Co.—1 tender and 3 barges, 35 small power boats and 4 tenders building.

Van Camp Seafood Co.—240 fishing boats, powered.

Japanese interests — 583 power fishing boats.

Miscellaneous—Private individuals and small operators who are not identified with the big companies handle 140 more of these little vessels. So it is evident that the total is large for the whole fleet which has Los Angeles Harbor as its home.

The value of the fish catch alone for the past year totals \$8,503,504, quite a lot of fish and dollars to be distributed from one central point. Much of this money is expended annually in refitting, repairing and new construction. All of this adds to the total wealth and prosperity of the Pacific Coast.

The figures do not include the many yachts, cruisers, and other pleasure craft. These all taken together with the tankers, freighters, lumber steamers, and ocean passenger liners have made Los Angeles Harbor a very busy port.



A reconditioning job leaving the Garbutt & Walsh yard for engine trials

MULLER'S LATEST CRAFT

WILLIAM MULLER of Wilmington is one of the old-timers in shipbuilding on this coast. He came out here on the old steamer Yaquina Bay in 1881, and has been building ships and boats ever since; first on Puget Sound, then on San Francisco Bay at Fulton yard, and then moving to Wilmington about twenty-five years ago. The business of the yard at Wilmington bearing his name has been built up by himself from a small beginning to its present capacity. Good work has always been the rule with Mr. Muller, and many repeat orders have been placed with him.

The latest contract which has been signed is one from W. E. Valentine of Los Angeles for an auxiliary powered schooner yacht. This vessel will be 110 feet overall and 85 feet 10 inches L. W. L., beam of 23 feet 6 inches, depth of 13 feet, which gives ample room for an exceedingly well laid out vessel. She will be built of the best materials obtainable. The deck and all woodwork above will be of teak, of which 14,000 feet will be used. Frames and planking will be of American woods. Her two masts will spread 5600 square feet of canvas. Besides this she will have a 100-horsepower diesel engine, to be used in calms or entering harbor. Sail, however, will be used mostly.

While laid out for comfort her lines show that she will have good speed. Provision has been made for the accommodation of the owner and six guests, these quarters to be elaborate and roomy. A large galley fitted with all modern appliances, a refrigeration machine, electric and wireless plant are to be installed.

Fresh water tanks of 1700 gallons capacity and fuel tanks carrying 2400 gallons will be built into the vessel, also a sump tank to take sanitary discharge. She will carry a crew of nine, including the master, all their quarters being large and comfortable.

The designers of the vessel are W. Gardner & Company of New York, and her cost will be about \$100,000.

A. YOUNG, PIONEER

Andrew Young, known to hosts of shipping men as "Andy" Young, is one of the oldest marine engineers on this Coast. He came out to the Pacific Coast from the East in 1875 as assistant engineer, and was employed on Puget Sound vessels for a time after that, serving on the



Andrew Young.



The two Al Larsons, senior and junior, and junior's mut.

Addie, Annie Stewart, and Donald. In 1880 he came to Wilmington, California, at that time not much but a sand flat, for the Bannings, as chief engineer of one of their tugs. In three months he was made superintending engineer, and stayed with them for thirty-seven years. In 1917 he opened an office as surveyor and handles the Southern District for the Pacific Board of San Francisco, and also for the Fireman's Fund Company. He is also consulting engineer for the Wrigley Company, which bought out the Banning interests, and supervised the construction of the steamers Avalon and Catalina for that firm.

Mr. Young's residence in Wilmington has been such as to permit him to observe the growth of a hamlet to a city, an experience not often enjoyed. He is a staunch booster for the place, and believes in its future. Associated with him are two of his sons, who assist him in the management of the office. Besides surveying, the firm does designing and drafting, specializing on workboats and similar craft. Mr. Young's long experience in the management of this sort of vessel gives him practical knowledge of the needs of new ones in the way of improvements.



A few of the many repair jobs at the Garbutt & Walsh yard.

TWIN DIESEL TUGS

TWO more full diesel twin screw towboats soon to be put into operation on the Ohio River. These boats, which will be named respectively Kosmortar and King's Landing, are being built by the Nashville Bridge Company of Nashville, Tennessee, for the Kosmos Portland Cement Company of Louisville, Kentucky. They will be exactly alike and will have a length of 75 feet, beam 19 feet, and draft 4½ feet. The power plant consists of two 120 horsepower Worthington two cycle, solid injection, direct reversing marine diesel engines, turning 48-inch manganese bronze propellers.

The hulls will, of course, be constructed of steel, and one of the outstanding features is that the shell plating will be of copper bearing steel, which has been demonstrated to have corrosion resisting qualities far superior to the ordinary ship or tank steel. The walkways along the deck will be checkered steel plate, a safety feature which the Nashville Bridge Company is putting on all their towboats.

The equipment will be complete in every way, including a Kohler automatic electric light plant, running water and washing facilities with showers, distilling apparatus for supplying drinking water, equipment for pumping out barges, and many other conveniences to make them both comfortable and practicable. The engines will set low in the hull on especially designed heavy built-up plate girders, which are framed into heavy transverse bulkheads, thus assuring absolute rigidity and absence from vibration. This provision for proper and adequate engine foundations is a

point which has been largely overlooked on most diesel engine installations in the past and has been one of the chief causes for the condemnation of diesel engines on river boats.

One of the main disadvantages of screw propelled boats, in the past, has arisen from the trouble experienced with the after shaft bearings. The Cutless rubber bearings manufactured by the B. F. Goodrich Rubber Company, which are being installed on these boats, will eliminate much of this worry, since they require no lubrication except water and are not affected by sand or grit.

The fuel consumption on these boats when delivering full 240 shaft horsepower amounts to about 16 gallons per hour, which at 6 cents per gallon amounts to only 96 cents per hour, or \$9.60 per ten-hour day. The lubricating oil consumption is 3000 shaft horsepower hours per gallon, which amounts to only 8/10 gallon, or about 40 cents per ten hour day.

For the past three years, the Kosmos Portland Cement Company has been operating the Kosmos, a similar but smaller boat built by the Nashville Bridge Company in 1922, and they found it so satisfactory and economical that they have now placed an order with the same concern for the two boats described above. These boats have been designed by H. B. Dyer, in charge of the marine department of the Nashville Bridge Company, working in conjunction with Charles Horner, president of the Kosmos Portland Cement Company.

A NEW BEARING METAL

A NEW bearing metal known as Harper Metal is being manufactured by the San Pedro Marine Engine Works. This metal will no doubt soon become a favorite with builders and engineers who need the best. It is an alloy of copper, lead and other metals, the whole producing something marvelous in wearing and holding qualities. A Pacific Marine Review representative was privileged to see a severe test of this new alloy at the San Pedro shops lately. A 2½-inch piece of machine steel had been turned at its mid length to conform to a crank pin. Onto this bearing was fitted a pair of the new metal journals, tightly set up, on the T end of a 24-inch rod. The pin piece was chucked in a lathe with the free end of the rod resting against the bed.

The lathe was started and run fairly fast for about

a half hour, the crank pin bolts being steadily tightened up meantime. The heat generated by the excessive friction was high enough to char paper or light wood. The writer felt sure that both the bearing and steel would be cut and scored beyond repair. However, on stopping and stripping the brasses not the slightest damage was noticeable. A very few shiny thin flakes of metal could be scraped off with a knife blade; otherwise there had been no change in the parts. It was an interesting experiment and showed clearly the high character of the metal alloy. It is a California product and will no doubt be in increasing demand where severe service is the rule. Its uses will be many as its cost will be only about that of any ordinary bearing metal, and it will hold up and stand an abuse that no other known metal will.

NEW MARINE MOTOR AT PORTLAND

THAT the Marine Rotary Valve Motors Company of Portland, Oregon, believes in its own products is shown by the recent action of that company in buying for demonstration purposes the cruising yacht Azalea. This vessel is being fitted out at considerable expense to make demonstrations of the rotary valve motor on the Pacific, Gulf, and Atlantic coasts.

The power plant of the Azalea, consisting of two 200-horsepower Hall-Scott poppet valve gasoline engines, is being removed and two rotary valve engines of the same bore and stroke substituted therefor. The

engineers of the Marine Rotary Valve Motors Company claim that they will show a large increase in power and a large decrease in fuel consumption.

The 6-cylinder rotary valve motor contains seventy-five less working parts than the same size poppet valve engine. The rotary valve enables a larger range of good working speeds. On the Azalea this range will be from 200 to 1750 revolutions a minute.

R. F. Barker of Portland is the inventor of this engine, and a strongly financed corporation has been organized to place his invention on the market.

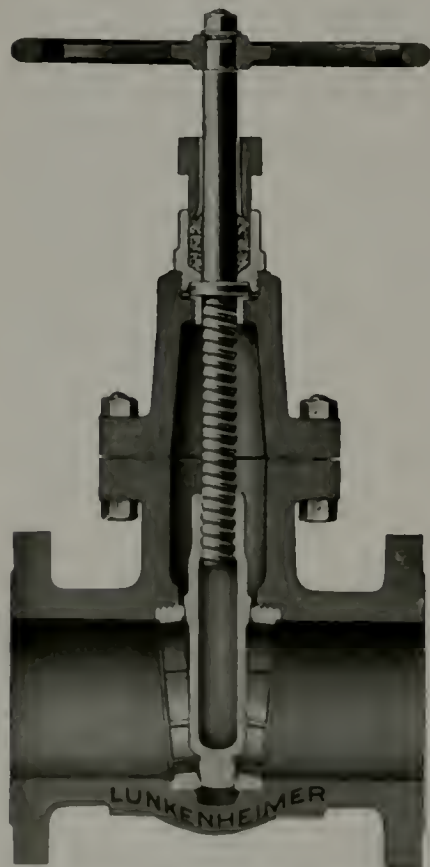
AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

LUNKENHEIMER NEW LINE OF IRON GATE VALVES

THE Lunkenheimer Company of Cincinnati, Ohio, manufacturers of valves and engineering appliances, have just released to the market an entirely new line of iron body gate valves, containing many structural features which undoubtedly will appeal to valve users.

The valves are made in two types, stationary stem, inside screw and rising stem, outside screw and yoke. Either type may be had in the standard patterns for 125 pounds working steam pressure or in the extra heavy pattern for 250 pounds—total temperature being 450 degrees F. They are furnished in all standard sizes.

The design of the bodies, with their ample thicknesses of metal properly distributed and having large fillets, insures to the maximum degree that strength and rigidity so essential to withstand the strains incident to expansion and contraction.



Lunkenheimer iron body gate valve, extra heavy pattern, inside screw type.

All parts are renewable and this includes the seat rings. Attention is directed to the manner in which the seat rings are held in place. (See illustration.) They do not form a joint with the body by the usual means of a small flange on their seating surfaces, which is depended upon to prevent the seats from dislodging when the wedging action between them and the disc takes place, but instead are solidly backed by the walls of the body, thereby preventing any possibility of their becoming loose or being wedged out of place.

The extreme care exercised in the finishing of these valves is evidenced by the fact that the ribs which act as guides for the disc and which are cast integral with the body are actually machined, as are also the grooves in the disc which engage the ribs. Naturally, the "side-play" of the disc is controllable by this finishing process and consequently the disc does not drag upon the seats nor touch them until the valve is fully closed. Therefore the excessive wear and marring of the seating surfaces incident to the dragging of the disc upon the seats is eliminated and the life of these parts is prolonged.

The disc of the inside screw, stationary stem pattern is hollowed only to the extent sufficient to receive the steam; that of the outside screw and yoke, rising stem pattern is solid throughout. The advantage of a solid disc is that when expansion and contraction occur, both sides of the disc are simultaneously affected, thereby preventing distortion of fracture and insuring tight seating surfaces.

The exceptionally deep stuffing box provides a large packing surface. The stuffing box is repackable under pressure when the valves are wide open, a tight seat being formed between the top of the disc and the bottom of the stuffing box bushing.

One of the novel features is that of the two lugs provided within the yoke arms directly above the stuffing box gland. When it is necessary to repack the valve, the gland is

raised above the lugs and by slightly turning it, the flange on the gland will rest upon these lugs, thereby dispensing with the usual method of tying up the gland while the stuffing box is being repacked.

Convenience of repacking is also afforded by the use of swing bolts which retain the stuffing box gland. To raise the gland only requires loosening of the nuts sufficiently to permit of swinging the bolts aside. Entire removal of the nuts is not necessary.

At no point does the stem come in contact with iron, as the yoke, gland and bottom of the stuffing box are all bronze bushed. Corrosion is thereby prevented and an easily operated valve assured.

The manufacturers claim that the materials employed are of a fabrication particularly adapted for valve service, not alone for high pressures and temperatures but also for the stresses incident to expansion and contraction and pipe strains.



Lunkenheimer iron body gate valve, extra heavy pattern, outside screw type.

Face to face dimensions of the flange ends valves are what is generally accepted by the trade as standard. Therefore replacements can be made without alteration of pipe lines.

This new line of gate valves is regularly furnished with the body, bonnet, yoke and gland of iron, and the stem, disc faces, seats, and yoke, gland and stuffing box bushings of bronze.

For handling cyanides, creosote, alkaline solutions and other fluids

which attack bronze but not iron, the "all-iron" type of the standard pattern is furnished. The standard pattern is also made in the quick-operating type with lever control. Electrically and gear operated valves of both standard and extra heavy patterns also form part of the Lunkenheimer new line of gate valves.

The Lunkenheimer Company have recently issued an attractive brochure portraying their new line. A copy may be had upon application.

Portable Electric Crane With Telescoping Boom

THE latest improvement to the well-known Elwell-Parker type CK portable electric crane is the telescoping boom. Many users have found that an especially long boom is at times a hindrance rather than a help, while with a short one there are frequent calls for a lift beyond the boom range.

To meet this situation a telescoping boom with 4 settings between 12 and 17 feet is now offered. The boom is all steel and raised or lowered by a special set of cables operated from an electric motor driven hoist unit with two grooved drums. The second drum carries the separate $\frac{3}{8}$ -inch plow steel non-twist cable to two part line hook block sheave on boom tip.

The heavy boom side channels are

lattice and gusseted with a continuous $\frac{1}{4}$ -inch steel plate extending above from the hoist cable sheave to the boom elevating sheave; i. e., throughout the length of the curved head of the boom.

The lower box, or enveloping sec-

tion, of the boom is of formed plate steel, providing a very stout support for the telescoping portion.

A feature of this boom is that the distance from top of boom to the hook is but 23 inches. This has been accomplished by suitably locating the trip switch. The advantages of this design are apparent when handling in low head room or reaching over a gondola car or motor truck.

The battery compartment, carrying hoist unit, counterbalances the boom with load on a steel crane column supported on ball and roller bearings. This column is set in heavy pedestal firmly anchored in main frame. The boom may be furnished with either hand or motor slew as required.

Crane controllers are entirely new design. All the well known Elwell-Parker safety features are incorporated in the latest design.

Standard Turbine Wire Brush

A PNEUMATIC turbine driven wire brush for use in scaling ships has been developed by the Standard Turbine Corporation, Scio, New York, which on account of its light weight and consequent ease of handling is ideal for this purpose.

The turbine consists of a wheel operating at a speed of 12,000 r.p.m. mounted on ball bearings and geared to the low speed shaft driving the wire brush.

The low speed shaft is laid in a long sleeve bearing and arranged also with a ball thrust bearing to take up any thrust imposed in applying the brush. Air is admitted to the turbine wheel by means of a small steel forging tested to a maximum speed of 100,000 r.p.m. The bearings are grease lubricated, the grease connections being arranged for the alemite system. The exhaust is through the center of the low speed shaft, assisting in keeping the brush clean.

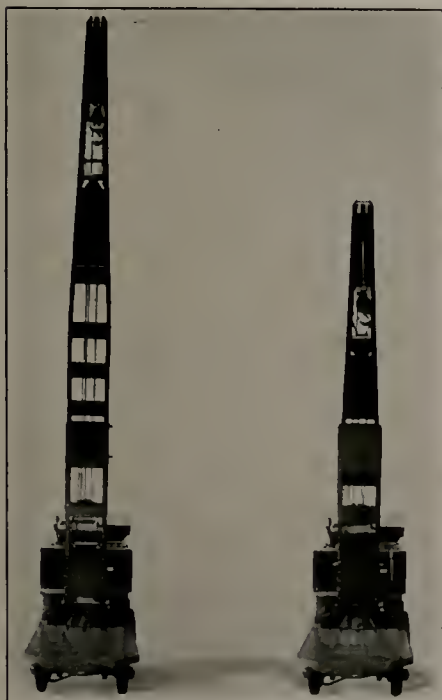
The standing torque of the motor is greater for equivalent air consumption than any reciprocating motor. The no-load speed of the motor is always such as to be less than one-third of the tested safe speed of the wheel.

The Standard air turbine motor has an all aluminum casing and its

total weight is 9½ pounds without the brush, about 11 pounds with the brush, making it by far the lightest motor on the market with its power. The motor is free from objectional vibration such as is always present in any type of reciprocating motor. It is simple in construction and consequently enjoys a low upkeep cost.

MATERIALS FOR PILING (Continued from page 416)

Harbor Board are being conducted by the engineering department under the direction of W. R. Sadler, chief chemist. Many tests are being made to cover as many of the phases as possible, without going into the durability of the concrete, which can only be determined after years of actual exposure to working conditions. We hope to obtain much information from these tests which will enable us to make a more economical design of concrete piling for use in the harbor and which we feel satisfied will pay for the making of the tests several times over. Unfortunately, these tests are in progress and the writer is unable to make a report at this time as to conclusions reached.



Elwell-Parker portable electric crane with telescoping boom.

LUBRICATION ON SHIPBOARD

An Open Forum—Questions on Lubrication Problems Are Invited; They Will Be Answered In Order of Receipt Through the Co-operation of the Associated Oil Company's Staff of Lubrication Engineers

INSTALLMENT No. 13

Question No. 54.—What is meant by demulsibility of a turbine oil?

Answer.—Demulsibility is the reverse of emulsion. In other words, demulsibility, according to the definition given by Dr. Hirschel, is the maximum rate of settling out of an oil from an emulsion in cubic centimeters per hour, when the emulsion is made and the rate of settling is found as follows:

Twenty c. c.'s of oil and 40 c. c.'s of distilled water are placed in a 100 c. c. cylinder, having an inside diameter of 26 m. m. and heated in a water bath to 55° C. The liquids are then stirred with a paddle for five minutes at a speed of 1500 r. p. m. The paddle is simple a metal plate 89x20x1½ millimeters submerged in the liquid. The cylinder is allowed to stand for an hour at a temperature of 55° C., and from each of the readings taken as frequently as necessary, the volume of oil settling out from the emulsion is calculated between the time of stopping the paddle and the time of observation. The maximum rate of settling thus obtained is called demulsibility and is used as a measure of resistance of the oil to emulsification.

The maximum possible demulsibility after the first reading is taken one minute after the paddle is stopped and is 1200. When an emulsion of oil and water is allowed to stand in a cylindrical glass vessel there will usually appear sooner or later a fairly clear meniscus between the emulsion and the layer above it of oil which has separated out and this meniscus will fall as the layer of oil increases in depth. Meanwhile a second less distinct layer separating the emulsion from the water will work its way up from the bottom of the vessel.

The U. S. Government demulsibility test is conducted as follows:

Pour 27 c. c.'s of oil to be tested and 53 c. c.'s of distilled water into a cylinder. Place the cylinder in a bath and heat it to 130° F. Submerge the paddle and run for five minutes at a speed of 1500 r. p. m. Stop the paddle, withdraw it from the cylinder and use the finger to wipe off emulsion clinging to the paddle and return it to the cylinder. Next wipe off the paddle with paper so that it will not contaminate the next sample. Keep the temperature of the cylinder constant at 130° F. and take readings every minute of the position of the line of demarcation, between the topmost layer of oil and the adjoining emulsion.

The first reading is taken one minute after stopping the paddle. With oils which act normally, the rate of settling out of the oil increases up to a maximum and then decreases and the maximum value in c. c.'s per minute is called the demulsibility and is recorded as a numerical result of the test.

The ordinary test for an engineer to make would be to fill a bottle one-third full of oil under consideration and add one-third of distilled water. Next shake the bottle vigorously until the oil and water are fairly well mixed. Now stand the bottle on the shelf and watch the results. A turbine oil of good demulsibility will rapidly begin to separate from the partial emulsion produced by the agitation and the oil is soon observed clean and free from cloudy effects floating on the surface of perfectly clear water. The line of demarcation between the oil and water should be sharp and clearly defined. Should a third mixture present itself same is known as a "cuff" and is an emulsion which resists the action of settling out.

Oils which leave thick opaque layers of emulsion between the oil and water or have a cloudy appearance of either the oil or water after standing thirty minutes or so are poor oils to put into a steam turbine system. Oils which do not

rapidly separate from water will form sludge and sediment and will plug up the strainers and cause trouble and much annoyance and are expensive products at any price.

The installation of centrifugal oil purifiers are a necessary addition to all well regulated plants, marine or otherwise. These purifiers will soon pay for themselves and are a constant safeguard to the oil supply.

Question No. 55.—Lard oil has always been recommended as the best thread cutting oil around shops where I have worked. Why is it superior to mineral oil?

Answer.—Thread cutting oils used on taps, dies, lathe tools, etc., are employed for the following primary reasons: first, as a cooling agent; second, as a lubricant.

As the lathe tools or dies cut into the surfaces of tough hard steel, heat is rapidly generated and it must be carried away or dissipated in some manner or the temper of the cutting tool will be drawn, thereby resulting in the ruination of the cutting edge and a loss of time in changing tools. Some of the heat is absorbed by the tool steel and tool holder and is lost by radiation, but this is not sufficient so oil is employed to absorb the generated heat and keep the tool cool, thereby performing much the same service as the water jacket on an automobile engine.

A point to consider in this connection is that heat expanding the cutting tools will naturally cause them to cut deeper and wider and in the case of thread cutting will make a difference in the fits; hence it is necessary to keep the die or cutting tool as cool as possible, thereby adding to the life and accuracy and efficiency of the cutting edge and producing a smooth job at greater speeds.

Lubrication is also important because the shavings from tough steel drag over the point of the lathe tool causing severe friction and without proper lubrication rapid wear, heat and rough unsightly unfinished surfaces are the result.

To accomplish the above purposes, oils of great natural oiliness are demanded and it is a well-known fact that the fixed oils, that is, animal and vegetable oils possess this to a greater degree than straight hydrocarbon oils.

Light viscosity mineral oils are used straight as cutting oils or are compounded with from 20 to 50 per cent of animal or vegetable oils, which produces a very superior cutting oil giving highly satisfactory results. No. 1 lard is a first-class cutting oil but owing to its great cost, it is not generally employed. Animal oils are liable to be the direct cause of many skin diseases due to the formation of bacteria in the oil. When animal oil is subjected to heat it turns rancid, gives off an offensive odor, and causes the formation of excessive free fatty acids.

In factories using large amounts of cutting oil and especially when the customary circulation methods are employed, steps are taken to sterilize the oil by the introduction of creosote, carbolic acid, formaldehyde, etc., to prevent the spread of contagious skin diseases and boils among the employees. Fish oil, whale oil, vegetable oils, various emulsions, cutting paste, compounds, and soluble oils are also employed in thread cutting and various machine work.

Question No. 56.—What is Petrolatum? What is it used for? Can light cup grease be used for the same purpose?

Answer.—The best grades of Petrolatum are familiarly known as the common product vaseline. Under the trade name of vaseline, it is medicated or used as a base for salves, oils, etc. Commercially, Petrolatum is used for the lubrication of ball bearings, gun grease, and similar purposes. Roughly speaking Petrolatum is the settlings from certain kinds of petroleum oils and is known under various names, such as petroleum jelly.

MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

THERE are some knotty questions arising in connection with the dilapidated condition of the one and only pier at Maracaibo, Venezuela, that may well interest shippers and carriers generally, but especially those who are engaged in the coffee trade. These questions concern certain kinds of liability as well as the extent of the protection afforded by the policy. Maracaibo has but one pier. It was originally built, owned and operated by merchants, but the Venezuela Government took advantage of a slight technicality, a few years ago, and the pier became its property. Since then it has furnished an illustrious example of the inefficiency of government ownership. Its flooring and supports have been allowed to rot and go unrepaired. A small appropriation was made, some time ago, for its restoration to a sounder condition, but the money found its way into other channels and the pier is in a more parlous state than ever.

In spite of the disreputable condition of the pier and the further fact of its being uncovered, there appears to have been little or no damage to cargo there in the past. But the carriers—and this is the point of disturbance—have been taking measures to safeguard themselves against eventualities. For the past year, steamship companies operating to and from Maracaibo have been noting on their bills of lading a clause disclaiming liability for loss of or damage to cargo while in their possession on the pier at that port. Now, at certain seasons, there is a heavy movement of coffee through Maracaibo from the Venezuela uplands, and those of Colombia, and it is well within the possibilities that a serious loss may occur at such times should the floor or supports of the pier collapse.

Pier Liability

This situation brings to the fore two important questions in marine

insurance. First, as to the liability of the underwriters in view of the exception clause in the bill of lading; second, as to their liability as respects the terms of the policy. There is a clause in many marine policies which warrants that the assured shall not relieve the carrier from any of its common law or statutory liability. To accept a bill of lading in which the carrier relieves itself from liability for damage to coffee on the Maracaibo pier is con-

sidered to be such a breach of this warranty as to free the underwriters from liability to cargo on the pier. Should the policy not contain such a warranty as the one above mentioned, or one of similar effect, the underwriters would be responsible for any damage to coffee on the wharf caused by perils insured against.

Thereupon the second question would arise. Does the policy cover against collapse and/or subsidence of the wharf? In many instances policies limit the liability on a wharf

to loss or damage by fire or rising navigable waters. Such policies, of course, would not cover loss due to the collapse or subsidence of the pier. This is a troublesome matter for all involved, and it would seem as though the time has come for some concerted action by interested parties to the end that this important pier should receive proper governmental attention. From August to October very heavy squalls arise on Lake Maracaibo which endanger property not securely built or well protected. The Venezuelan Government should be aroused to the importance of adequate action in the matter.

A Side-tracked Appeal

Despite the objections made by the United States and Germany to the revision of the York-Antwerp Rules adopted at Stockholm last year by the International Law Association, it is becoming evident that little or nothing is going to be done about it for some time to come. These rules have to do with methods of handling general average—one of the time-honored institutions of marine insurance. The Americans and the Germans found considerable objection to the way the Stockholm conference figured the new rules out—not the underwriters, who were willing to accept the new arrangements, although they do not consider them in all respects satisfactory—but the shipping interests, who feel they would lose important privileges if the alterations were universally accepted. It is true that most of the other countries represented at Stockholm have accepted the new rules and urged their governments to legislate so as to make them available; but we alone have the Harter Act, which defines carriers' liability in a way to suit most Americans, and which the altered rules would conflict with. The Amer-

DO YOU KNOW?

The Pier Liability covered by your marine policy?

The conditions under which you may be shipping to Maracaibo?

The present complications in General Average?

The changes in American policy forms as of July 1, 1925?

The deadlock concerning "on board" bills of lading?

The abuse of "open" policies?

Mr. Howell's monthly articles are equivalent to a correspondence course in marine insurance developments.

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ican and German objections have been passed along to sub-committees of the Executive Council of the International Law Association and definite action on them has not been thought "advisable" at this time.

General average is not the most popular feature of marine insurance. If it were advanced in these days as an entirely new idea it would probably meet with little support. But it is a very ancient principle, antedating marine insurance itself, and has become deeply rooted in the commercial law of all maritime nations. Its abandonment has frequently been advocated in recent years, in the interest of securing a short cut and eliminating unnecessary detail, but the old custom still has myriads of supporters who see in it a salutary agency for the prevention of the unnecessary destruction of property through jettison or otherwise in order to save vessels in danger of sea perils.

A general average loss is one resulting from the voluntary sacrifice, made under fortuitous circumstances, of a portion of either ship or cargo, or the voluntary incurrence of expense for the sole purpose of preserving the common interest from an impending danger. When everything is in peril, as in a heavy storm, and it looks as though ship and cargo would go to the bottom, masts and other incumbrances are cut away and some of the cargo is thrown overboard so that the ship and the rest of the cargo may possibly be saved. This financial loss is shared by all in the proportion which the amount preserved to each interest bears to the total value saved. General average adjusters compute this due proportion, and it often takes them years to do it, their finally submitted reports frequently swelling to the proportions of enormous volumes. This is both ponderous and highly expensive, not to mention the time

consumed before the final settlement is secured. The Stockholm version of the York-Antwerp Rules does not alter the method. It merely defines it a little more clearly. The name "York-Antwerp" came about in this way: In 1864 a meeting was held at York, England, for the purpose of reconciling the differences in general average practice among the various commercial nations. Thirteen years later, another such meeting was held at Antwerp, and at this latter a code of rules was adopted on the subject which was styled the "York-Antwerp Rules." In 1890 this code was revised at a meeting at Liverpool, and the new arrangement was called "York-Antwerp Rules, 1890." Now comes the Stockholm revision, and the latest name is "York-Antwerp Rules, 1924."

Policy Forms Altered

The foregoing will make more intelligible the recent action taken by the American Marine Insurance Syndicates, which write hulls and disbursements, in collaboration with the American Institute of Marine Underwriters making effective, as of July 1, 1925, the following changes in the policy form: In the Bottom Painting Clause the present wording is deleted and there is substituted for it the following, "No claim shall in any case be allowed in respect of scraping or painting the vessel's bottom." Also, the Foreign General Average Clause is amended to read as follows, changes being in heavy type: "General average and salvage charges payable in accordance with the York-Antwerp Rules, 1890, (either including or excluding Rule No. 1) of the York-Antwerp Rules, 1924, if so provided for in the contract of affreightment. As regard matters not provided for in the York-Antwerp Rules of 1890, or the York-Antwerp Rules of 1924, (when the contract of affreightment does not provide for such rules), general average and

salvage charges shall be payable in accordance with the laws and usages of the United States. Provided always that when adjustment according to the laws and usages of the port of destination is properly demanded by the owners of the cargo, general average shall be paid in accordance with same."

In connection with this change in the Bottom Painting Clause it may be explained that the present form of policy in use in New York and London for American Hulls-Atlantic contains a clause which makes underwriters liable under certain contingencies for bottom painting. This has been badly abused, and there has been considerable correspondence between New York and London underwriters with a purpose of adjusting this difference, as the London Institute Time Clauses make no allowance for bottom painting. While the American underwriters believe the latter's position quite proper, they realized that it would cause difficulties for adjusters; and, further, San Francisco underwriters do not want to stop using the London Institute wording.

It should also be added that neither does the San Francisco Board of Underwriters like the London wording of the Foreign General Average Clause, above mentioned, particularly the phrase "either including or excluding Rule 1 of York-Antwerp Rules" in connection with the contract of affreightment. Nor do the San Franciscans want to include the jettison of deck cargo in general average, as the occasion requires. But the New Yorkers feel that the Syndicate policy should be no less favorable than the Institute Time Clauses.

"On Board" Bills of Lading

Between the underwriters and the carriers it is a continual pull and haul. Each thinks the other is "getting away with murder." For example, here is the nice little prob-

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lem of silk "on board" bills of lading. It concerns silk shipments from the Far East, and it is making a very considerable "tempest in a tea cup." It is important, because of the broad principle underlying it. Here is the story:

American importers of Far East silk complain of confusion and misunderstandings growing out of the practice of carriers in the trade issuing to shippers in Japan and other points in the Orient "on board," or "shipped," bills of lading without the goods being actually placed on the vessel that is to carry them. This suits the Japanese exporter, because he finds he can get such a bill of lading not only before putting his merchandise aboard but even before he has bought it. The carrier takes to the idea because it relieves him of liability until the goods are actually on board. But the underwriter is dead against it, because it makes him hold the bag. It extends his liability for damage while the goods are on the dock, and makes questionable his subrogation rights as against the carrier. This issue has been on the firing line for some while, but is just now coming to a show down. The Silk Association of America drew up an agreement six months ago to do away with the issuing of the "on board" bills, and have been desperately trying to get the steamship lines to endorse it. The American Oriental Mail and the Blue Funnel lines have done so, and they are refusing to issue "on board" bills until they actually have the goods on their vessels. But the Canadian Pacific and the three leading Japanese lines are standing out against the agreement. All efforts on the part of the American and British lines to have the Pacific Conference adopt regulations against the practice have been so far blocked by the dissenting carriers. The former argue that something has got to be

done, because there is a great likelihood of a serious situation developing at any time due to loss on a shipment for which such advance-of-shipment bills of lading have been issued. Silk shipments are rushed with all speed to their destinations in order to catch the fluctuating market, and these cargoes not infrequently reach valuations of \$5,000,000 and more. It is evident that a claim for loss due to delay in shipment would be a very serious matter. The British and American lines are willing to issue "received for shipment" bills when the goods have been offered in advance of the sailing of the vessel.

It may be interesting to show how the "on board" practice appeals to the Oriental shipper. Vessels carrying silk from the Orient usually sail a few hours after loading is completed, and as the shipper has to wait for his bill of lading until the goods are actually on board, and then go through various operations in connection with the shipping documents, it is often found impossible to negotiate and forward those documents by the same vessel as carries the merchandise. The obliging carrier finds it pleases his shippers and eases his own liability if he grants an "on board" bill—and that is why the practice has grown up.

Open Policy Abuse

One of the greatest time-savers in connection with marine insurance is what is known as the "open" or floating policy. It is a development out of the needs of the great commercial transactions of present times, and it could scarcely be gotten along without. It is a contract issued for a definite or indefinite period of time and covers the assured with respect to all his shipments as described in the policy within the named geographical limits. It is called "open" because the assured may go right along with his

shipments, reporting them to his underwriter, without having the delay and trouble incident to taking out specific insurances upon each individual movement of his goods. It satisfies the banking requirements when, as is generally the case, hypothecation is necessary.

But the element of good faith enters very largely in such an arrangement, and underwriters have been feeling for a long time that the open policy is very much abused. It is the duty of the assured to make prompt reports of his shipments to his underwriter, but too often this is not done, and the underwriter is under a contractual liability for which he is receiving no premium at all. Beyond question the insurance companies are done out of thousands of dollars right along through the non-reporting of insured shipments. No check or audit is, as a rule, conducted on the records of the assured, the chief exception being in the cotton trade. The reports from the shippers are often made only in event of loss. When the underwriters see that a merchant whom they have insured is not making declarations proportionate with the business he is known to be doing, and he is asked about it, he invariably "passes the buck" by saying it was the fault of some clerk in his office and that he will have the miscreant discharged at once. One underwriting office tells of a recent case where the only declarations it received from a certain assured were those accompanied by reports of a loss. Upon investigation it was learned that the young lady in charge was under the impression that only those shipments were to be reported on which claims appeared! The subject is mentioned here because unless there is an improvement in the matter of declarations underwriters are likely to take defensive action in protection of their obvious rights.

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August 18, 1925.

SINCE our last report to you dated July 21, the following steamers are reported fixed with grain to the United Kingdom and Continent: Japanese stmr. 32/6, Nov. loading, Strauss & Co.; British stmr. Waziristan, 30/-, Sept., charterers not mentioned; British stmr. General Botha, 31/3, Sept.; Dutch stmr. Tenbergen, 30/-, Aug; Norwegian m.s. Chris Knudsen (new), Oct., rate and charterers not mentioned; Dutch stmr. Alchiba, 32/6, Sept., Strauss & Co.

For grain to the Orient the following steamers are reported: Japanese stmr. Meiwo Maru, \$3.75, Yamashita Co., Inc.; Japanese stmr. Shunsho Maru, Sept., rate and charterers not mentioned; Japanese stmr. Usuri Maru, British Columbia to Dairen, \$4.75, Yamashita Co., Inc.

The following steamers are reported fixed with lumber to Australia: Japanese stmr. Fuji Maru, Aug., J. J. Moore & Co.; Japanese stmr. Bankoku Maru, \$13.50, Sept., J. J. Moore & Co., Inc.

The following lumber fixtures for the Atlantic seaboard are reported: American stmr. Tanana, South Alberta Lumber Co.; Japanese stmr. Clyde Maru (or substitute), \$14.75, Aug. loading; Japanese stmr. Havre Maru, Aug., \$15; American m.s. Frank Lynch, \$16.50, Sept.-Oct.; American stmr. Commercial Guide, Aug., \$16; American stmr. Cadaretta, prompt loading, Nettleton Lumber Co.; British stmr. Skegness, Sept., Middleton Lumber Co.; American stmr. Castletown, \$15.50, prompt, Parks & Lawton; American stmr. Georgian, Sept., Chas. R. McCormick & Co.; American stmr. W. R. Chamberlin, Jr., \$16, Sept.; American schr. John Ena, piles, terms private, A. F. Mahoney; American stmr. El Capitan, same.

The following time chartered stmr. are reported: Norwegian m.s. Ferncliff, 12 months, trans-Pacific trade, 4/1½, charterers not mentioned; Norwegian stmr. Leikanger, time charter (5 to 7 months), \$1.05, North Pacific to West Coast South America, delivery San Francisco, by W. L. Comyn & Co., Aug.

loading; British stmr. Golden Cape, North Pacific to Australia, one round trip, delivery Australia, prompt loading, rate not mentioned, J. J. Moore & Co., Inc.; British stmr. Cape Comorin, delivery Puget Sound, redelivery North of Hatteras, 4/3, Aug. loading, South Alberta Lumber Co.; Norwegian stmr. Stella, 12 months, Central American coffee trade, Sept., Panama Mail Steamship Co.; British stmr. Orient City, delivery North Pacific, redelivery Australia, time charter, one trip, \$1.20, W. L. Comyn & Co., Sept.

The British stmr. Kingswood is reported fixed from one nitrate port to three ports Hawaiian Islands, October loading, Balfour, Guthrie & Co., \$5.

PAGE BROTHERS, Brokers.

New Incorporations

American Metallic Lifeboat Company, Seattle, has been incorporated with an authorized capital stock of \$99,000 by John Borges and W. C. Edwards.

Godfrey Propeller Adjusting & Manufacturing Company, Seattle, has been incorporated by Bert C. Godfrey and Beulah M. Godfrey with capital stock of \$50,000.

Chas. R. McCormick Lumber Company, with head offices at San Francisco and other offices in all Pacific Coast ports, has been incorporated under the laws of Delaware for \$15,000,000. Incorporators are Chas. R. McCormick, S. M. Hauptman, John M. Hencken, James S. Brown, Chas. L. Wheeler, Ira S. Lillick, J. Arthur Olson, Theodore M. Levy, Hunt C. Hill, Jos. J. Geary, and Chalmers G. Graham.

The Oregon Warehousing & Forwarding Co., Portland, has been incorporated with a capital stock of \$50,000 for handling fresh apples and other perishables, by C. A. Finger.

The International Marine Products Company, Los Angeles (harbor), has been incorporated under the laws of Colorado for \$3,000,000 and has asked permission of the California Corporation Commission to sell \$500,000 worth of stock for equipment for fishing operations.

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AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

Shipping Board Conversion Contracts

THE Emergency Fleet Corporation Department of Maintenance and Repair, 45 Broadway, New York City, will have specifications ready September 1 and will ask for bids for the installation of diesel engines on the first two of the fourteen vessels to be converted to motorships. The two vessels will be selected from the steamer Seminole, located in New York, and the steamers Tampa and Unicoi, located at Norfolk. The engines to be installed in these vessels will be those manufactured by the Worthington Pump & Machinery Corporation at their Snow-Holly Plant at Buffalo.

Other announcements recently issued by this office concerning progress being made toward conversion of the fourteen steamers to diesel power are as follows:

Pumps.—Contracts for the furnishing of pumps to outfit the fourteen Shipping Board vessels are as follows:

To the Kinney Manufacturing Co., 8 oil pumps (4 ships), \$5616; 4 fuel oil pumps (4 ships), \$4656.

To the Nash Engineering Co., 28 circulating water pumps (14 ships), \$24,528; 4 piston cooling pumps (2 ships), \$2780; 2 fresh water cooling pumps (2 ships), \$1752; 14 fire and bilge pumps (14 ships), \$12,880; 14 engine room bilge pumps (14 ships), \$9730; 28 fresh water and salt water sanitary pumps (14 ships), \$8764; spares for water pumps (14 ships), \$3810.

Auxiliary under deck motors.—Bids have been opened for 30-30-horsepower, 18-20-horsepower and 68 7½-horsepower motors for under deck auxiliaries. The totals are as follows: General Electric Company, \$29,987; Electro Dynamic Company, \$30,374; Westinghouse Electric & Manufacturing Company, \$33,656; Diehl Manufacturing Company, \$35,220; Engberg Electric & Manufacturing Works (incomplete bid), \$11,764, each, on 7½ horsepower motors.

Shafts, coupling bolts, and nuts.—Bids have been opened for the furnishing of shafts, coupling bolts, and nuts and centering plates for the first two vessels to be converted. Newport News Shipbuilding & Drydock Company were low bidders, their bid being \$8300 for one shaft and \$16,300 for two. Other bids submitted were: Reading Iron Com-

pany, \$8887.50 and \$17,775; Federal Shipbuilding & Drydock Company, \$9000 and \$18,000; Bethlehem Steel Corporation, \$9375 and \$18,750; Sun Shipbuilding & Drydock Company, \$10,674 and \$21,348; The Midvale Company, \$12,475 and \$24,950.

Heating boilers.—Bids submitted for the furnishing of heating boilers for fourteen vessels were submitted by two companies—the American Radiator Company, who bid \$887.67 each for 14 cast iron sectional heating boilers; the Newport News Shipbuilding & Drydock Company, who bid \$2700 for the first and \$1900 each additional of 14 steel vertical fire tube boilers with corrugated fire box; they also bid \$2600 for the first and \$1775 for each additional boiler with plain fire box.

Torsion meters.—Bids for fourteen torsion meters were received from The McNab Company, Bridgeport, Connecticut, \$856.15; and from the Kelvin & Wilfred O. White Company, Boston, \$1758 each.

Specifications have also been issued and contracts will shortly be awarded for furnishing fourteen emergency air compressor units; also for four water and twenty-nine oil coilers; also fourteen switch and control boards.

WORLD SHIPBUILDING DECLINES

A new low post-war record in shipbuilding is shown by returns for all maritime countries at the end of the second quarter of 1925, according to Lloyd's Register of Shipping. Little change occurred, however, in the rank of the various countries. France, which stood third during the first quarter of the year, changed places with Italy, which had been in fourth place. The United States, which ranked seventh, just ahead of Japan and behind Denmark, moved up to the place of the latter, and is now sixth. Japan, which was 42,000 tons behind Denmark, is now only 19,000 tons behind.

The decrease in shipbuilding is accompanied by a falling off in orders for steam tonnage, but, on the other hand, by an increase in orders for motor tonnage, so that almost 50 per cent of the world's shipbuilding is now composed of motor ships.

The returns on indicated horsepower of marine engines now being built are further evidence of the growth in popularity of the motorship. Out of the total 1,721,378 indicated horsepower, 353,144 represent the aggregate of steam turbines, 559,970 of reciprocating steam engines, and 808,264 of internal combustion engines. The indicated horsepower of motor-driven ships is therefore only 100,000 less than for steam turbines and steam engines combined.

FORD MAY CONVERT VESSELS

Under the contract by which Henry Ford obtained 200 vessels from the United States Shipping Board for \$1,706,000 for scrapping, he had the right to reserve 50 of this number for possible conversion to motorships. No announcement has been made by Mr. Ford as to whether or not he will take advantage of this clause, but it is believed that he will convert a few of these to motorships to be put into service as part of his present ocean-going fleet.

The smaller size vessels purchased under the scrapping program (those of suitable draft) will be taken to River Rouge, Michigan, for scrapping; the large size ocean vessels will probably be cut up at some point on Delaware River and the parts loaded onto lake vessels and towed to the scrapping yard by the seven tugs, which Mr. Ford recently purchased from the Shipping Board.

Work in Prospect

Plans for the new inter-island passenger ship for the Inter-Island Steam Navigation Company, Honolulu, are being held up pending the arrival at Honolulu in September of William Gibbs of Gibbs Bros., New York. Mr. Gibbs will make a survey of the inter-island ship-pin needs, after which plans and specifications for the new vessel will be drawn and the contract let to the lowest bidder.

The City of Tacoma and Pierce County, Washington, are planning the financing of a fireboat. Construction of the boat would cost about \$100,000; it would have a length of 85 to 100 feet and a pumping capacity of about 7500 gallons an hour.

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IN PACIFIC COAST SHIPYARDS

**SHIP REPAIRING
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ENGINE REPAIRS**

The General Petroleum Corporation, Los Angeles, announced that they may build another tank diesel-electric barge for bay and river work on the Pacific Coast after the barge recently contracted for with the Bethlehem Shipbuilding Corporation has been completed and demonstrated her operating costs.

McCauley, Hibbs & Smith, naval architects and marine engineers of San Francisco, are still working on the plans for two new ferryboats for the Key System Transit Company, San Francisco.

Robert Warrack, superintendent in charge of the 17th lighthouse district, Portland, Oregon, will open bids September 15 for the construction of a 63-foot tender for handling work in connection with the navigation aids on the Columbia River. The craft will be powered with a diesel engine.

T. H. Larke, who retired some months ago as Pacific Coast manager of the Panama-Pacific Line, recently stated, while on his return to the Pacific Coast on the steamer Mongolia, that the International Mercantile Marine Company, is now drawing up plans and specifications for two new vessels for the Panama-Pacific Line. Mr. Larke said that the two ships would be as large as the Mongolia and Manchuria, would be fast, and would have luxurious accommodations for passengers.

Recent Contracts

American Bridge Company, Pittsburgh, Pa., has an order from the Crucible Steel Co. for twelve barges 175 by 26 by 11 feet for delivery next January; this company also has an order for twelve barges 140 by 25 by 9 feet for the T. C. I. & Ry. Co. for January delivery.

Federal Shipbuilding & Drydock Company, Kearny, N. J., has contract from the U. S. Army Engineers for the seagoing diesel-electric hopper dredge Willets Point.

Marietta Manufacturing Co., Point Pleasant, W. Va., has an order from the Island Creek Coal Co. for a stern-wheel steamer, 125 feet between perpendiculars, 30 feet beam, 5 feet 2 inches depth.

Newport News Shipbuilding & Drydock Company has an order for the hulls for two harbor tugboats for the Pennsylvania Railroad, also an order for three barges for the Arundel Corporation.

Keel-layings

Passenger and freight steamer for the Merchants & Miners Transportation Co., by Newport News Shipbuilding & Drydock Co., July 30.

Two carfloats for the Pennsylvania Railroad by the Sun Shipbuilding Co., July 29 and Aug. 1.

Launchings

Ahyee, schooner yacht for Dave H. Morris by Bath Iron Works, Ltd., July 16; Nancy, schooner yacht for G. M. Hecksher Aug. 4.

John A. Topping, bulk freighter, for Columbia S. S. Co., by Great Lakes Engineering Works, July 18.

Barge for District Engineers, U. S. A., by Newport News Shipbuilding Co., Aug. 5.

Deliveries

Four barges for the Ohio River Co. by American Bridge Co., July.

Nokomis, schooner yacht, to Wm. A. W. Stewart by Bath Iron Works, Ltd., and Venturer, schooner yacht to Harold Wesson, July 16.

Robert J. Kernan, bulk freighter to Geo. Hall Coal & Shipping Co. by Collingwood Shipbuilding Co., Collingwood, Ontario, July 16.

Four steel scows to City of Philadelphia by Wm. Cramp & Sons, July 17 and August 5.

WM CORNFOT, President

GEO. RODGERS, Sec'y-Treas.

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IN ATLANTIC COAST SHIPYARDS

**SHIP REPAIRING
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ENGINE REPAIRS**

Two carfloats to Reading Company by New York Shipbuilding Corp., July.

Hampton Roads, ferryboat, to The Chesapeake Ferry Co. by The Pusey & Jones Co., July 25.

Repairs

Bethlehem Shipbuilding Corporation, Union Plant, on August 1 was given contract by the Standard Oil Company for the reconditioning of the tanker Montrolite. Bids submitted for this work were: Bethlehem Shipbuilding Corporation, \$58,842; United Engineering Co., \$62,176; General Engineering & Drydock Co., \$62,865; Moore Dry Dock Co., \$63,748.

This company on August 13 received contract for collision damage repairs to the Matson liner Mauna Ala, on a bid of \$13,999.

* * *

Moore Dry Dock Company, Oakland, has the contract for collision damage repairs to the steamer Melville Dollar, which collided with the Mauna Ala on August 9. The Moore Dry Dock bid was \$25,950.

This plant also recently reconditioned the Associated Oil tanker Betterton at a cost of approximately \$37,000.

* * *

The Albina Marine Iron Works, Portland, Oregon, received contract from the Shipping Board for the installation of tanks for transporting vegetable oil on the steamer West Cayote to cost \$8700. If offerings for this class of carrier warrant, further vessels of the Columbia Pa-

cific Shipping Company's fleet will be equipped with oil tanks.

* * *

Yarrows, Ltd., Victoria, B. C., was awarded contract for repairs to the Princess Beatrice of the Canadian Pacific Steamships, Ltd. The vessel was damaged by stranding on Louise Rock at the mouth of the Skeena River.

* * *

Matson Navigation Company has called for bids for enlarging the refrigerating compartments on the steamer Maikiki.

* * *

Shipyard News

The Burrard Dry Dock Company, Vancouver, British Columbia, on August 17 celebrated the official opening of their new \$3,000,000 drydock and shipyards. Hon. Dr. J. H. King, Federal minister of Public Works, and Sir Henry Thornton, President of the Canadian National Railways, were the guests of honor. The dock is 566 feet long with an inside width of 98 feet, and a lifting capacity of 20,000 tons, making it large enough to accommodate the largest vessels of the Canadian Pacific Lines. The dock was commenced in January, 1922.

* * *

The plant of the Albina Marine Iron Works, Portland, Oregon, was damaged by fire to the extent of about \$15,000 on August 1.

* * *

The Bethlehem Steel Corporation, in the person of E. G. Grace, president, recently announced plans for expansion of the company's activities on the Pacific Coast. Joseph J. Tynan, vice-president of the Bethlehem Shipbuilding Corporation, and general manager of the Union Plant, with branches at San Francisco, Alameda, and San Pedro, has been appointed vice-president of the parent company, the Bethlehem Steel Corporation. Arnold Foster, secretary-treasurer of the Union Plant, has been promoted to a similar position with the parent company.

At the same time plans for the expansion of the steel company's Pacific Coast distributing facilities were announced. These plans call

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for the erection of waterfront warehouses and plants for handling structural steel and other steel products manufactured by the company at San Francisco, Seattle and Los Angeles.

* * *

The Skinner & Eddy Corporation of Seattle, who were actively engaged in the war-time shipbuilding program, have sued the United States Shipping Board Emergency Fleet Corporation for \$3,260,032.41, claiming that this amount is still due on shipbuilding contracts.

* * *

The marine repair firm of Laing & Thompson, Portland, Oregon, will be hereafter known as the Central Engineering Works. The personnel of the firm is unchanged, E. A. B. Wood and James Laing being proprietors.

* * *

The Wilson Shipbuilding Company, Astoria, Oregon, recently delivered to the city of Portland a new harbor patrol boat, the F. W. Mulkey. The boat is 61 feet 2½ inches long, 14 feet 6 inches beam. She is powered with a 110-horsepower Atlas-Imperial diesel engine.

* * *

The Angeles Gravel & Supply Company recently built at their own plant at Port Angeles a 72-foot tug for service on Puget Sound. The tug is powered with a Sumner oil engine built by the Markey Machinery Co., Seattle.

* * *

The boat building yards of Los Angeles Harbor may have the opportunity to build some additional fishing boats shortly. The International Marine Products Company, which was incorporated under the laws of Colorado for \$3,000,000, has asked permission of California Corporation Commission to sell \$500,000 worth of stock. The returns from this sale would be used to operate extensive fishing fleets and canning factories along the coast of Mexico. George H. Cowan is president of the company.

* * *

A dredge owned by the Sonoma Sand and Gravel Company, Oakland, California, was recently destroyed by fire caused by an explosion of a 250-gallon tank of gasoline. The loss is estimated at \$25,000.

* * *

The Sacramento River steamers Delta King and Delta Queen, which are being built by the California Navigation Company at their own plant at Stockton, California, will be ready for service for the summer of 1926. The vessels, besides having

cargo holds, will be equipped with passenger accommodations and practically all the conveniences and luxuries of ocean-going liners.

* * *

Patricia II, a model fishing vessel, had her trials off Los Angeles Harbor on August 16. This vessel is 110 feet long, 23 feet beam and is powered with 250 horsepower Fairbanks-Morse diesel engines. She is equipped with refrigeration capacity for 100 tons of fish and for long cruises off the Mexican coast, where she may also serve as a tender for

other craft. The vessel was built for the Toyo Fisheries, Wilmington, by the Terminal Boat Works, San Pedro. The cost was \$68,000.

* * *

The American Salt Company has announced that they will purchase two motorships for carrying crude salt from San Quentin, Lower California, to Los Angeles, in the event that the company decides to build a salt refining plant at Los Angeles harbor. F. K. Rogers is general manager of the company and is at present in Mexico.

Progress of Construction

Pacific Coast

BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT Potrero Works

Purchasing Agent: O. W. Street.
No name, hull 5327, diesel-electric tank barge for General Petroleum Corp.; 170 L.B.P.; 32 beam; 11.6 loaded draft; 9 mi. loaded speed; 920 D.W.T.; 2 Atlas-Imperial diesel engs, 250 B.H.P. ea.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

Barge, 100x36 feet; for stock; keel June 8/25.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION San Pedro, Calif.

Purchasing Agent: L. A. Hanson.
No name, hull 47, straight stem and elliptical stern, one deck, fireboat, for Los Angeles Fire Department; 93 ft 4 in L.B.P.; 19 ft beam; 6 ft 6 in loaded draft; 17 mi speed; 900 SHP; Winton gas engs; keel June 26/25; launch Sept 19/25, est; deliver Oct 25, est.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460 L.B.P.; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel April 21 deliver April 26, est.

ROBERTSON'S SHIPYARD Alameda, Calif.

No name, towboat, San Francisco Bridge Co.; 50 L.B.P.; 15 beam; 5 draft; 100 IHP Union diesel eng; keel May 4/25; deliver July 1/25, est.
Barge, 60x26x6 ft; keel Apr 27/25.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
One towboat, Carnegie Steel Co.; 170x39x6 1½; deliver July 25, est.
Three deck barges, U. S. Engineers, Pittsburgh; 120x32x8.
Four barges, U. S. Engineers; 80x26x5.
Three barges, for Patton Tully; 160x34x7 ft; deliver Nov 25, est.
Two barges for the Standard Oil Co. (Ia.); 275x52x9; deliver Sept 25, est.
Thirty barges for the Ohio River Co.; 175x26x11; 4 delivered.
Twelve barges, Crucible Steel Co., 175x26x11; deliver Jan 1/26, est.
Twelve barges, T. C. I. & Ry. Co.; 140x25x9; deliver Jan 26, est.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.
No name, hull 790, self-unloading stone carrier, Bradley Transportation Co.; 566 L.B.P.; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Burke.
Nokomis, hull 107, schooner yacht, for Wm.

A. W. Stewart; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Mar 16/25; launch July 6/25, delivered July 16/25.

Venturer, hull 108, schooner yacht, for Har- old Wesson, same as above; keel Mar 18/25; delivered July 16/25.

Ahyee, hull 109, schooner yacht, for Dave H. Morris, same as above; keel Mar 20/25; launched July 16/25.

Nancy, hull 110, schooner yacht, for G. M. Hecksler; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr 8/25; launched Aug 4/25.

Seafarer, hull 111, schooner yacht, for Parker Corning; 58 L.O.A.; 12 beam; 7-6 draft; Karmath eng; keel Apr 21/25/25; delivered Aug 7/25, est.

Charmian, hull 112, schooner yacht, for Newcomb Carlton; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr 23/25; launch Aug 12/25, est.

Shearwater, hull 113, schooner yacht, for F. L. Crocker; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Apr 27/25; launch Aug 12/25, est.

Calliope, hull 114, schooner yacht, for Julius Fleishman, same as above; keel May 1/25; launch Aug 12/25, est.

Yo-Ho, hull 115, express cruiser, W. E. D. Stokes, Jr.; 50 ft over-all; 10 ft beam; 3 ft draft; keel May 5/25; launch Aug 15/25, est.

Helena II, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 IHP each; keel Jan 20/25; launch and deliver Aug 12-14/25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmington, Del.

Hull 3496, tug, J. W. Sullivan Co., hull only; 93 ft 6 in L.B.P.; 25 ft beam; 9 loaded draft; keel June 28/25.

Hull 3497, same as above; keel June 29/25.

Hull 3498, earfloat, D. L. & W. R. R.; 326 L.B.P.; 40 beam; 5 loaded draft; keel May 18/25.

Hull 3499, sister to above; keel June 1/25.

No name, hull 3500, fireboat for the City of Houston, Texas; 117-6 L.B.P.; 27 beam; 8-6 loaded draft; twin screw; diesel-electric drive; 14 mi speed; two 500 IHP Winton 4-cycle diesel engs; Westinghouse generators.

CHARLESTON DRY DOCK & MACHINERY COMPANY Charleston, S. C.

Purchasing Agent: Charles R. Valk.
Georgia, hull No. 90, towboat, U. S. Eng. Dept.; 134 L.B.P.; 30 beam; 2 ft 8 in loaded draft; WT boiler, 1570 IIS; keel Nov 24/25; launched Feb 24/25; deliver Oct 25, est.

Selma, hull 97, snagboat, U. S. Eng. Dept.; 156 L.B.P.; 33 beam; 2 ft 11 in loaded draft; 1 Scotch boiler, 11 ft 6 in by 12 ft 3 in; keel Feb 25/25; launch May 25, est; deliver Dec 25, est.

COLLINGWOOD SHIPBUILDING CO. Collingwood, Ontario

Purchasing Agent: E. Podmore.
Robert J. Kernan, hull No. 76, bulk frgr., Geo. Hall Coal & Shipping Co., Montreal; 252 L.B.P.; 43 beam; 14 loaded draft; 9 mi loaded speed; 2360 DWT; TE engs, surface condensing; 700 IHP 2 Scotch boilers; 12 ft 6 in by 11 ft; keel Feb 5/25; launched July 6/25; delivered July 16/25.



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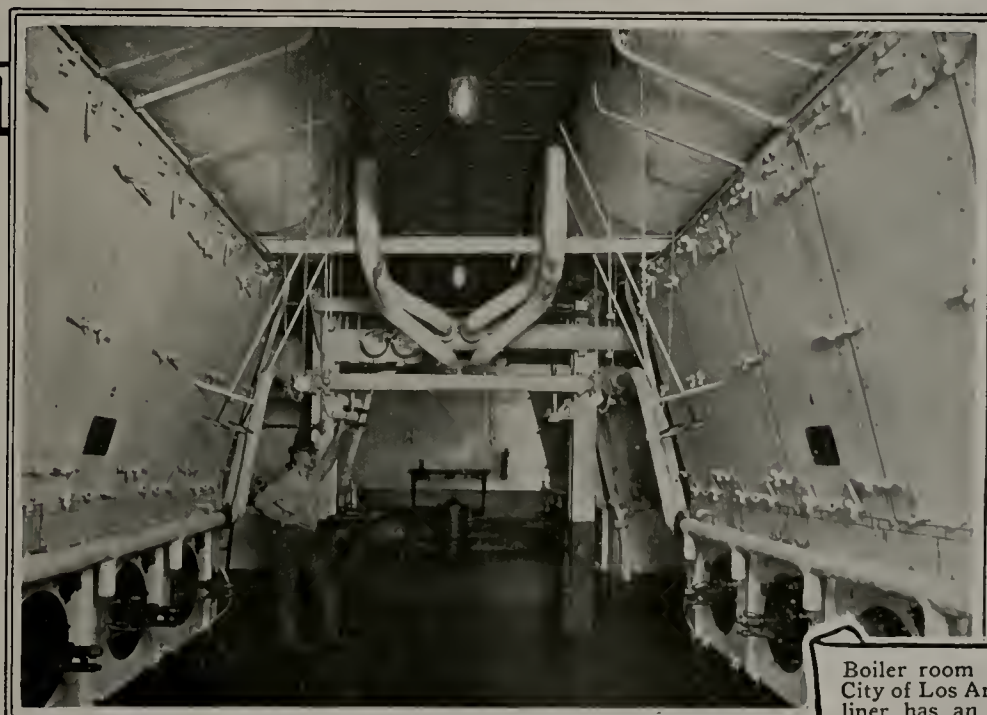
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CONSOLIDATED SHIPBUILDING CORPORATION

Morris Heights, N. Y.

Hull 2780, steel cruiser, W. O. Briggs; 118x21; 2 100 HP Winton diesel engs.
Hull 2796, cruiser for C. W. Sellick, 50 ft long; 2 Liberty engs.
Hull 2797, cruiser for R. F. Hoyt, 81 ft long; 2 Wright & Typhoe engs, 500 HP each.
Hull 2798, cruiser for H. C. Stutz, 65 ft long; 2 180 HP Speedways.
Hull 2799, cruiser for Elliott & Co., 44 ft long; 180 HP Speedway.
Hull No. 2800, cruiser for J. S. Caldwell, 68 ft long; 2 150 HP Speedways.
Hull 2801, cruiser for L. P. Fisher, 70 ft long; 2 300 HP Speedways.
Hull 2803, cruiser for G. M. Brown, 92 ft long; 2 300 HP Speedways.
Hull 2807, steel cruiser for Carl Fisher, 150 ft long.

WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO.

Philadelphia, Pa.

Purchasing Agent: Ed. C. Geehr.

Maholo, hull 509, express passenger and freight liner, Matson Navigation Co.; 582 L.O.A.; 577 length at water line; 83 ft beam; depth molded to C deck 54 ft; displacement 22,050 tons; 8250 DWT; speed 22 knots regular, 23 knots maximum; 25,000 shaft horsepower; Cramp-Parsons turbines; oil burning B&W water tube boilers; keel May 4/25.
Hulls 510-17, 8 steel scows, City of Philadelphia; 100 cu yds capacity; 2 delivered July 17/25; 2 delivered Aug 5/25.

DEFOE BOAT & MOTOR WORKS

Bay City, Mich.

Purchasing Agent: G. O. Williams.

Northerner, hull No. 79, wooden cruiser, E. F. Cowley Lanning; 42 ft 10 in long; 10 ft beam; 3 ft draft; 12 mi speed; Scripps E-6 gas engs; keel Feb 1/25, launch June 20/25, est; delivered July 1/25.
Hull No. 80, steel vessel, U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 210 DWT; 300 HP; diesel engs; keel Feb 28/25; launched Apr 30/25, delivered Sept 15/25, est.
Hull No. 81, sister to above; keel Feb 28/25; delivered Oct 1/25, est.
Hull No. 82, sister to above; keel Mar 11/25; launch Sept 15/25, est.
Hull No. 83, sister to above; keel Mar 12/25; launch Sept 15/25, est.
Hull No. 84, sister to above; keel Mar 21/25; launch Oct 1/25, est.
Hull No. 85, sister to above; keel Apr 1/25; launch Oct 1/25, est.
Hull No. 86, sister to above; keel Apr 10/25; launch Oct 15/25, est.
Hull No. 87, sister to above; keel Apr 18/25; launch Oct 15/25, est.
Hull No. 88, sister to above; keel May 5/25; launch Oct 15/25, est.
Hull No. 89, sister to above; keel June 15/25, est; launch Nov 2, est.
Hull 90, steel patrol boat for U. S. Coast Guard; 98 LBP; 23 beam; 7 loaded draft; 12 mi speed; 210 DWT; 300 HP; diesel engs; keel Sept 1/25, est.
Hull 91, sister to above; keel Sept 1/25, est.
Hull 92, sister to above; keel Sept 1/25, est.
No name, hull 93, steel yacht, Logan G. Thomson; 113 LBP; 21.6 beam; 7.6 loaded draft; 14 mi speed; 600 HP; diesel engs; keel Oct 1/25, est.

DRAVO CONTRACTING COMPANY

Pittsburgh, Pa.

Hull 372-24, inc. 16 sand and gravel barges for Keokuk, S. L. & S. Supply Co.; 135x27x8; 320 gr tons each.
Hulls 413-414, two steel derrick boat hulls for stock; 40 ft x 48 ft x 5 ft 6 in; 100 gr tons each.
Hulls 415-416, inc. 10 barges for stock; 110 ft x 26 ft x 6 ft 6 in; 270 gr tons each.
Hull 419, wheat hull, for U. S. Engineers, Rock Island; 129 ft x 39 ft x 5 ft 2 in.

FEDERAL SHIPBUILDING & DRY DOCK COMPANY

Kearny, N. J.

Purchasing Agent: R. S. Page.

No name, hull 83, freighter, U. S. Steel Corp.; 111 LBP; 41 ft 9 in beam; 20 loaded draft; 120 DWT; Worthington engs, 900 SHP.
No name, hull 84, diesel electric freighter, U. S. Steel Corp.; 111 LBP; 42.9 beam; 20 loaded draft; 120 DWT; 700 HP; Nelsco engs.
No name, hull 85, tugboat, diesel electric, for U. S. Army Engineers; 193 LBP; 111 ft 4 in beam; 19 ft 6 in depth molded to W line; diesel engs.

GREAT LAKES ENGINEERING WORKS

River Rouge, Mich.

Purchasing Agent: Chas. Short.

Hull 99, steel freighter, Cleveland; 618 L.O.A.; 592 LBP;

62 beam; 32 depth; 20 draft; 13,500 DWT; 12 1/2 mi speed; keel Feb 10/25, launched May 23/25; delivered July 25/25.

John A. Topping, hull 21, bulk freighter, Columbia S. S. Co., Cleveland; 618 L.O.A.; 492 LBP; 62 beam; 32 depth; 20 draft; 13,500 DWT; 12 1/2 mi speed; keel Apr 7/25, launched July 18/25; delivered Sept 1/25, est.

HOWARD SHIP YARDS & DOCK COMPANY

Jeffersonville, Ind.

Purchasing Agent: Jas. E. Howard.

Algiers, hull 1577, Catamarin type, for Algiers Public Service Co.; 144 LBP; 67 beam on deck; 4 ft 6 in loaded draft; non-condensing engs, 18 hp; 2 fire-tube boilers, 50 in x 26 ft; keel Sept 27/24; launched Mar 28/25; deliver June 25/25, est.

New Orleans, hull 1578, sister to above; keel Nov 4/24; launched May 19/25; deliver July 15/25, est.

Union, hull 1579, sternwheel towboat, for Union Sand & Gravel Co., Huntington, W. Va.; 130 ft LBP; 28 ft beam; 3 ft 6 in loaded draft; non-condensing engs, 15 in x 6 ft; 3 fire-tube boilers, 44 in x 22 ft; keel Mar 31/25; launched May 25/25; deliver July 4/25, est.

L. S. Chicot, hull 1580, sternwheel towboat, U. S. Engineers, Vicksburg, Miss.; 108 ft 6 in LBP; 23 ft beam; 3 ft loaded draft; non-condensing engs; 15 in x 6 ft; 2 fire-tube boilers, 40 in x 22 ft; keel June 10/25, est.

Hull 1581, 15-ton derrick boat hull, for U. S. Engineers, Pittsburgh, Pa.; keel July 15/25, est.

MANITOWOC SHIPBUILDING CORPORATION

Manitowoc, Wis.

Purchasing Agent: H. Meyer.

No name, hull 216, freighter, Rockport Steamship Co.; 470 L.O.A.; 60 beam; 31 depth.
Hulls 217-18, dump scows, Great Lakes Dredge & Dock Co.; 1000 cu yds capacity.

MARIETTA MANUFACTURING CO.

Point Pleasant, W. Va.

Purchasing Agent: S. C. Wilhelm.

No name, hull 138, stern-wheel boat for Island Creek Coal Co.; 125 LBP; 30 beam; 5 ft loaded draft; 500 HP; tandem comp engs; 3 return tubular boilers; deliver Dec 1/25, est.

MIDLAND BARGE COMPANY

Midland, Pa.

Purchasing Agent: H. S. Neal.

Contract 1040, 2 steel barges with cargo box for Standard Sand & Gravel Co., Wheeling, W. Va.; 300 ft x 26 ft x 6 ft 6 in; deliver July 2/25, est.

Contract 1041, 2 steel barges for Barrett Line, Cincinnati; 110 ft x 22 ft x 8 ft; deliver Aug 2/25, est.

Contract 1042, 1 steel wharfloat for City of Baton Rouge, La.; 230 ft x 40 ft x 12 ft; deliver Dec 25, est.

Contract 1043, 1 steel barge, for U. S. Engineers, Montgomery, Ala.; 80 ft x 26 ft x 5 ft; deliver Nov 25, est.

MIDLAND SHIPBUILDING COMPANY, LTD.

Midland, Ontario

Purchasing Agent: R. S. McLaughlin.

Glencagles, hull 14, single deck freighter, Great Lakes Trans. Co., Ltd., Midland, Ontario; 582 LBP; 60 beam; 20 loaded draft; 11 knots speed; 12,000 DWT; TE engs, 2800 HP; 3 Scotch boilers, 15 ft 3 in x 11 ft 6 in; keel Mar 16/25; launch Aug 26/25, est; deliver Oct 1/25, est.

NASHVILLE BRIDGE COMPANY

Nashville, Tenn.

Purchasing Agent: Leo E. Wege.

Chamberlin, hull 91, steamboat hull, principals not named; 140 LBP; 31 beam; 5 loaded draft; keel Aug 15/25, est; launch and deliver Oct 25/25, est.

Nashville B., hull 92, diesel towboat, builders' account; 110 LBP; 28 beam; 5 loaded draft; 400 HP; diesel engs; keel May 1/25; launch Sept 15/25, est.

No name, hull 93, barge, for builder's account; 120 LBP; 30 beam; 7 loaded draft.

No name, hull 94, diesel electric towboat, U. S. Engineers; 70 LBP; 17 beam; 4 draft; 150 HP; eng, keel Sept 20/25, est.

No name, hull 95, same as above, keel Sept 20/25, est.

North Star, hull 96, twin screw, tunnel type towboat; 100 LBP; 26 beam; 4 draft; 480 HP; diesel eng, keel May 2/25; launch and deliver Sept 10/25, est.

Kosmott, hull 97, towboat, twin screw; 75 LBP; 19 beam; 4 1/2 loaded draft; 240 HP; diesel engs, keel Oct 1/25, est; deliver Dec 1/25, est.

Kings Landing, hull 98, sister to above; keel Oct 1/25, est; deliver Dec 15/25, est.

Hull 99, deck barge, 14' x 32' x 9', keel Oct 15/25, est; deliver Dec 1/25, est.

NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY

Newport News, Va.

Purchasing Agent: Jas. Plummer, 233 Broadway, New York City.

Semmore, hull 275, combination steamer, Clyde S. S. Co.; 387-6 LBP; 54 beam; 31-6 depth; 14 1/2 loaded speed; 2600 DWT; Newport News Curtis engs; 4200 SHP; 4 Scotch boilers; keel Sept 9/24; launch April 4/25, est; deliver Aug 25/25, est.

Coamo, hull 280, combination steamer, New York and Porto Rico Steamship Co.; 412 LBP; 59 ft 6 in beam; 35 depth; speed 15 1/2 knots; Newport News-Curtis turbines; 6000 SHP; Scotch boilers; keel Jan 19/25; launched July 22/25; deliver Nov 25, est.

Mohawk, hull 287, combination steamer, Clyde S. S. Co.; 387 ft 6 in LBP; 54 ft beam; 31 ft 6 in draft; 14 1/2 loaded speed; 2600 DWT; Newport News-Curtis turbines, 4200 SHP; 4 Scotch boilers; keel April 2/25; launch Sept 25/25, est; deliver Jan 1/26, est.

No name, hull 288, combination passenger and freight steamer, Merchants & Miners Transportation Co., Baltimore, Md.; 350 length; 52 beam; 36 depth; 13 1/2 mi speed; TE eng; 4 Scotch oil-fired boilers; keel July 30/25; deliver May 1/26, est.

No name, hull 289, sister to above; keel Sept 2/25, est.

No name, hull 290, sister to above; keel Nov 2/25, est.

Hull 291, barge, for District Engineers, U. S. A., Wilmington, N. C.; 80 ft long; 26 ft beam; 5 ft depth; launched Aug 5/25.

Hull 292, diesel-electric 20-in pipe line suction dredge, U. S. Engineers, Philadelphia; 230 ft long; 40 ft beam; 14 ft depth; McIntosh & Seymour diesel engs; keel Oct 1/25, est.

No name, hull 293, yacht for Haney Payne Bingham; diesel eng; keel Oct 1/25, est; deliver Dec 25, est.

Hull 294, hull for harbor tugboat, Pennsylvania R. R.; 105 long; 24 beam; 14 depth.

Hull 295, hull, same as above.

Hull 296, barge, Arundel Corp., Baltimore; 80x24x5 ft 2 1/2 in.

Hull 297, barge, Arundel Corp.; 60x21x5.

Hull 298, barge, sister to above.

NEW YORK SHIPBUILDING CORP.

Camden, N. J.

Purchasing Agent: L. G. Buckwalter.

No name, hull 304, diesel tanker; 480 ft long; 9500 gr tons; 13,000 DWT; New York-Workshop engs. 3200 HP; keel May 25; launch fall 1925, est.

Hulls 306-7, carfloats, Reading Company; 250 ft long; keels May-June 25; delivered July 25/25.

Hulls 308-11, carfloats, Reading Co., 200 ft long; keels May 25.

Hull 312, dredge hull, 140 ft long, for Boneyons Co.; keel fall 1925, est.

THE PUSEY & JONES CO.

Wilmington, Del.

Purchasing Agent: James Bradford.

Hampton Roads, hull 1029, automobile and passenger, twin screw, double deck ferryboat, The Chesapeake Ferry Co., Norfolk Ferry Co., Norfolk, Va.; 197 L.O.A.; 59 ft 8 in beam; 9 ft 3 in loaded draft; 14 mi speed; 2 comp. engs; 2 Gunboat boilers; keel Mar 2/25; launched May 28/25; delivered July 25/25.

SPEDDEN SHIPBUILDING CO., INC.

Baltimore, Md.

Purchasing Agent: Wm. J. Collison.

York, hull 261, steel hull ferry, Gloucester & Yorktown Ferry Co., Gloucester Point, Va.; 115 LBP; 44 beam; 12 loaded draft; 260 HP C. O. Fairbanks-Morse eng; keel May 22/25; launched Aug 9/25; deliver Sept 15/25, est.

STATEN ISLAND SHIPBUILDING COMPANY

Staten Island, N. Y.

Purchasing Agent: R. C. Miller.

John A. Lynch, hull 753, ferryboat, City of New York; 151 ft long; launched Mar 26/25; deliver Aug 8/25, est.

Henry Bruckner, hull 754, sister to above; keel Sept 2/24; launched June 27/25.

No name, hull 755, sister to above; keel Sept 2/24.

No name, hull 757, sister to above; keel Feb 18/25.

No name, hull 758, sister to above; keel Mar 27/25.

Albany, hull 756, ferryboat, New York Central R. R.; 210 ft long; keel Dec 27/24; launch Sept 1/25, est.

SUN SHIPBUILDING COMPANY

Chester, Penn.

Purchasing Agent: H. W. Scott.

Hull 85, carfloat, Pennsylvania Railroad; 358 LBP; 47 ft 4 in beam; 12 ft 6 in depth; keel July 29/25; deliver Dec 24/25, est.

Hull 86, sister to above; keel Aug1/25; deliver Jan9/25, est.

Hull 87, carfloat, Pennsylvania R. R.; 250 L BP; 34 beam; 9 depth; keel July25/25; est; deliver Nov1/25, est.

Hull 88, sister to above; keel Aug3/25; est; deliver Nov16/25, est.

Hull 79, carfloat, Pennsylvania R. R.; 145 L BP; 36 beam; 10 depth; keel Aug10/25; est; deliver Nov17/25, est.

Hull 90, sister to above; keel Aug17/25; est; deliver Nov31/25, est.

Hull 91, carfloat, Pennsylvania R. R.; 230 L BP; 38 beam; 10 ft 6 in depth; keel Aug31/25; est; deliver Nov24/25, est.

Hull 92 carfloat, sister to above; keel Sept7/25, est; deliver Dec10/25, est.

TEBO YACHT BASIN, TODD SHIPYARD CORP.

Brooklyn, N. Y.

Purchasing Agent: J. Flynn.

Murray Hulbert, hull 32, ferryboat, Dept. of Plant Structure, City of New York; 148 LBP; 53 ft beam over guards, 37 ft 6 in beam molded; 9 ft 9 in loaded draft; 11 knots loaded speed; 588 gross tons; comp engs; 2 B&W boilers, 3182 sq ft heating surface; keel Sept4/24; launched Dec27/24; deliver May/25, est.

Edward Reigelman, hull 33, ferryboat, City of N. Y., sister to above; keel Sept4/24; launched Dec27/24; deliver June/25, est.

Julius Miller, hull No. 34, ferryboat, City of N. Y., sister to above; keel Sept4/24; launched Jan27/25; deliver July/25, est.

Maurice Connelly, hull No. 35, ferryboat, City of N. Y., sister to above; keel Feb19/25; launched Apr23/25; deliver July/25, est.

No name, hull No. 36, ferryboat, City of N. Y., sister to above; keel Feb19/25; launch June14/25, est; deliver Aug/25, est.

THE CHARLES WARD ENGINEERING WORKS

Charleston, W. Va.

Purchasing Agent: E. T. Jones.

Geo. T. Price, hull 37, tunnel propeller towboat, Kelly Transportation Co.; 126 LBP; 26 beam; 5 loaded draft; 2 diesel engs, 360 BHP each; keel June17/25; launch Oct1/25, est.

No name, hull 38, sternwheel towboat, The Ohio River Co.; 145 LBP; 32 beam; 5 draft; recip 700 IHP engs; return tubular boilers, 42 in x 26 ft; keel Oct15/25, est.

Repairs

BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT Potrero Works

Drydock, paint, misc. repairs: Santa Rosa (engine, boiler, hull), Dakotan, Missourian, Robert Johnson, El Segundo, Kewanee, Progreso, President Harrison, Vulcan (caulk bottom), Charlie Watson, Alvarado, Tahchee, Ohioan, Meiggs, President Van Buren, E. P. Ripley, Texan. Convert to motorship: Lio. Engine repairs: Silvanus, Newport. Install Dahl oil system: Tahchee. Drydock: President Wilson, Maunawili (for survey). Engine, boiler, hull repairs: Ecuador, Chiapas, Makura, Sinaloa, Solano, Midway. Propeller repairs: Brookings, Alvarado, Cascade, Samoa, Coos Bay, Point Judith, Uta-carbon. Install Beth-Weir Pump: H. F. Alexander. Install bulkheads: Katrina Luckenbach. Telemotor repairs: Richmond, Ruth Alexander. Alterations to social hall: Manoa. Pipe repairs: Crampton Anderson, San Roberto. Misc. repairs: Lake Frances, Robert Johnson, Hercules, J. A. Moffett, Wellesley, Panaman, Californian, Catherine G. Sudden, W. S. Miller, Finland, Lahania, Canadohta, Mary E. Moore, Point Loma, Rosalie Mahoney, Cricket, Katherine, President Monroe, Diana Dollar, City of Panama, Tulsagas, K. R. Kingsbury, Hawaii, Mexican, Hanley, Daylight, Finland, Felix Taussig, Liebre, Manoa, E. M. Phelps, Arizonan, Martinez, Hawaiian, Col. E. L. Drake, Chattanooga City, Montrolite, Point Lohos, Eurana, Tacoma, Tamalpais, Walter A. Luckenbach, Guerrero.

San Pedro Works

Drydocked and repairs: West Jester, City of Los Angeles, Tamaha, yacht Zahma. Misc. repairs: stmr. San Roberto, Los Mamos, Uta-carbon, Ecuador, Finland, Newport, Coalinga, San Leon, Standard Arrow, Norlina, Byron D. Benson, schrs. Samoa, Haleco, Covenia, tug Star.

COLLINGWOOD SHIPBUILDING COMPANY

Collingwood, Ontario

Purchasing Agent: E. Podmore.

Stmr. J. Frater Taylor, new tail shaft and hub installed. C. G. stmr. Grenville, hull cabins, engines, boilers, and auxiliary machinery reconditioned.

LOS ANGELES SHIPBUILDING & DRYDOCK CORP.

San Pedro, Calif.

Purchasing Agent: L. A. Hanson. Drydock, clean, paint: yachts Aurora, Ylarba, Hawaii, Windward, fishboat New Moon, whaler Columbus, steamers West Prospect, Los Angeles (also general repairs).

MOORE DRY DOCK COMPANY Oakland, Calif.

Drydock, clean, paint, misc. hull, engine, boiler repairs: stmr. Tecumseh, San Pedro, West Nivaria, Admiral Fiske, Washington, Westport, Colombia, m.s. Doris Crane, tug Standard No. 1, oil barge Santiago. Drydock, clean, paint, misc. rudder and propeller repairs: m.s. Port Costa, ferry San Leandro. Drydock, clean, paint, misc. hull, deck, and rudder repairs: David Scannell, lightship No. 76, U. S. A. T. Cambrai, Smith Rice Barge No. 1, stmr. Tiverton. Drydock, clean, paint, misc. hull repairs: stmr. Peter Maerak, West. Pac. barge No. 1. Misc. eng. repairs: stmr. Crockett, President Lincoln, President Cleveland (also deck), Wellesley (also hull), Anne Hanify, Nordic, Mericos II, Whittier, m.s. Olinda. Propeller repairs: tug Hercules, stmr. Annette Rolph, Covenia. Hull repairs: stmr. Crescent City, Ryder Hanify. Deck repairs, stmr. Mt. Clinton. Alteration to deck, misc. hull and eng. repairs: U. S. T. Somme.

TODD DRY DOCKS, INC. Seattle, Wash.

General alterations: yacht Norsal, barges Biscayne, Black Wolf. General repairs: W. H. Baxter, Wm. M. Tupper. Misc. repairs: stmr. Admiral Dewey, Victor, West Isom, Camanche, H. F. Alexander, Admiral Rogers, Dorothy Alexander.

VICTORIA MACHINERY DEPOT CO., LTD. Victoria, B. C.

Dock, clean, paint, extensive hull and deck repairs occasioned by striking bridge, boiler repairs: stmr. Grainer. Dock, clean, paint, eng. and hull repairs: stmr. Princess Royal, Charmer, tugs Quinitsa, Dilla C. Dock, clean, paint, tailshaft repairs: C. G. stmr. Madge, stmr. Bervin (also propeller), tug Nora. Dock, clean, paint: scow. Dock, clean, paint, misc. repairs: yacht Invader, scow, stmr. Canadian Pioneer (boiler, hull, engine, and deck). Dock, repairs: yacht Suva, tug Hopkins (rudder), stmr. Crofton (tailshaft). Deck piping: stmr. Famous.

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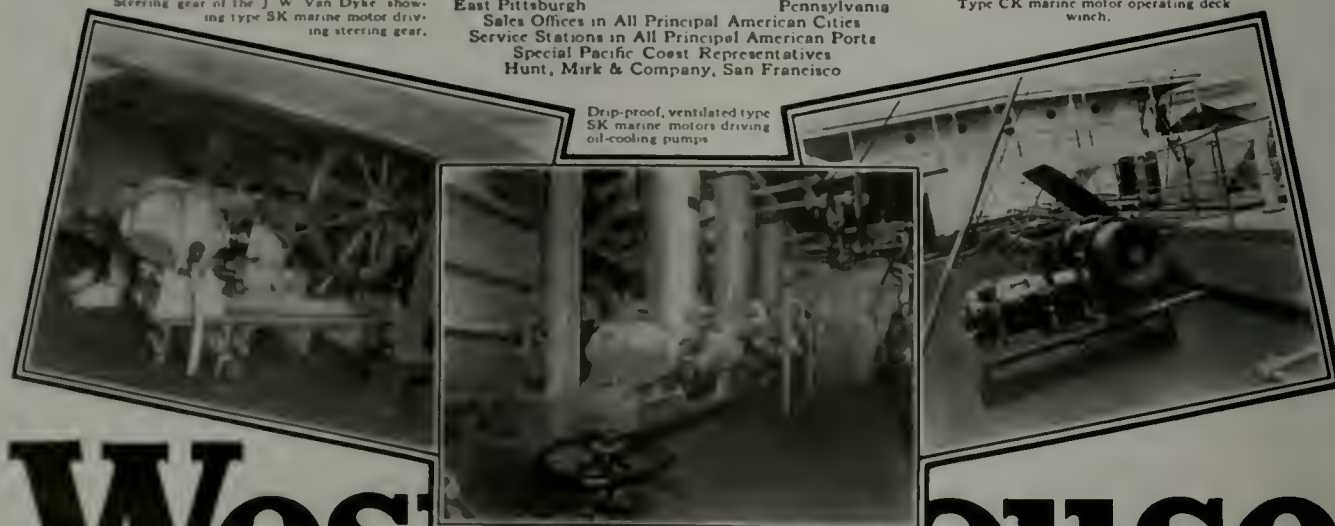
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Steering gear of the J. W. Van Dyke showing type SK marine motor driving steering gear.

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PLEASE MENTION PACIFIC MARINE REVIEW

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

OCEANIC OFFICIALS

OCEANIC Steamship Company announces the creation of an executive staff to manage its traffic activities. The three members of the group are Hugh Gallagher, appointed operating manager; M. F. Cropley, freight traffic manager; and H. N. Thomas, passenger traffic manager. This marks a sweeping reorganization in direction of the Oceanic Line, historic carrier of the Pacific, which owns and operates a fleet of steamers between San Francisco and Sydney, Australia, by way of the Hawaiian, Samoan, and Fiji Islands. The appointments indicate that a plan of expansion is being developed which promises much for the future of American shipping on the Pacific.

Expert Staff

The new operating officials of the Oceanic Steamship Company have all had more than twenty years' experience in the steamship business, and are among the best known traffic men in the United States. Hugh Gallagher is at present assistant operating manager of the Pacific Steamship Company at San Fran-



Hugh Gallagher

cisco and M. F. Cropley is assistant freight traffic manager of the same company. H. N. Thomas is assistant general passenger agent of the Dollar Steamship Line, San Francisco.

Effective September 1

It is announced that in making selection of officials for its program of expanded activity, the Oceanic Steamship Company made an extensive canvass of shipping circles throughout the country and chose Gallagher, Cropley, and Thomas as leaders in their field. The new appointments are in effect September 1. Headquarters of the executive group are to be in the Oceanic building, 2 Pine street, San Francisco.

Hugh Gallagher

Hugh Gallagher, appointed operating manager of the Oceanic Steamship Company, has achieved prominence and wide popularity in his career of steamship traffic direction. His activity in the shipping field began in 1906, when he was placed in charge of operations of petroleum ships of the Standard Oil Company in Manila. Returning to the United States in 1910, he engaged in railroading as superintendent of con-

struction for Twohy Bros. Company. Upon the formation of the Pacific Steamship Company in 1916, Mr. Gallagher was made its agent at Juneau, Alaska. Going thence to New York City as general eastern agent, he had charge of United States Shipping Board vessels operated to and from Europe by the Pacific Steamship Company. In this capacity he had an advisory part in determining construction features of the "535" type of liners and took over five of these government vessels for service between Seattle and the Orient now operated by the Admiral Oriental Line.

Hugh Gallagher was a member of the standing committee which drafted the important "MO-4" agreement, which established the basis on which Shipping Board vessels are operated. He was transferred from New York City to San Francisco in 1921 as assistant operating manager of the Pacific Steamship Company. Prominent in shipping circles, he served on the first executive committee of the National Merchant Marine Association. He holds the honorary position of president of the Waterfront Employers' Association, is a



H. N. Thomas



M. F. Cropley



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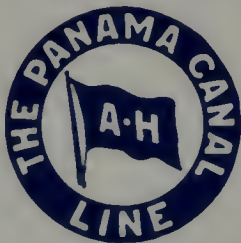
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230 California street. Phone Sutter 3600.

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The Robert Dollar Co.
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Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

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SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles, to Philadelphia, New York and Boston.

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MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Garfield 5000.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland,

Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARRIBEAN GULF LINE

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FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

2 Pine Street. Phone Sutter 3800.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York. Westward calls: New York, Puerto Colombia, Cartagena, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo Los Angeles, and San Francisco.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,
310 Sansome St. Phone Garfield 6760.
285 Bacon Bldg., Oakland. Phone Lakeside 3580.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
F. C. Bennett, Pacific Coast manager.
110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

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Mutual Life Bldg. Phone Eliot 8120.

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SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

OCEANIC LINE

director of the Pacific American Steamship Owners' Association, and member of the maritime and harbor committee of the San Francisco Chamber of Commerce.

M. F. Cropley

M. F. Cropley, appointed freight traffic manager of the Oceanic Steamship Company, is a shipping man of long experience. He began in May, 1906, with the Alaska Pacific Steamship Company. In January, 1915, he was made general agent of the Pacific Alaska Navigation Company. Recognizing his ability, the Pacific Steamship Company, in 1916, appointed him assistant general freight agent at San Francisco.

In April, 1920, Mr. Cropley was appointed assistant manager, and in September, 1921, was transferred to Portland as manager of the Oregon district. He returned to San Francisco on January 1, 1922, as assistant freight traffic manager, remaining in that position up to the present time, constituting twenty years of continuous service with the Pacific Steamship Company and its predecessors.

In addition to their accomplishments with the Pacific Steamship Company, Hugh Gallagher and M. F. Cropley have been active in building up the intercoastal service of the Panama-Pacific Line, a subsidiary of the International Mercantile Marine Company.

H. N. Thomas

H. N. Thomas, appointed passenger traffic manager of the Oceanic Steamship Company, is recognized as a leader in the transportation field. In 1907 he joined the Pacific Mail Steamship Company, advancing to the post of acting general passenger agent, which he held until October, 1915, when the old Pacific Mail Steamship Company retired from business. He then joined the China Mail Steamship Company, organizing and conducting its passenger business as general passenger



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Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Regular sailings between Seattle, San Francisco, Los Angeles, and Philadelphia, New York, Boston, Baltimore, and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier 6. Phone Elliott 5367.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4 Central. Phone Elliott 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Office, 619 Second Avenue and Operating Office:
Pacific Steamship Company.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—Intercoastal.

Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

M. O. Beggs, Agent.
4421 White Building. Phone Elliott 6127.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.

Arctic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane street terminal. Phone Elliott 6657.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.
Transportation Bldg. Phone 821-336.
FREIGHT ONLY.

SAILINGS—Every 5 days from San Francisco, Oakland, Alameda, and Los Angeles to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone TRinity 4891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.

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SAILINGS—Intercoastal Service.

Sailings between Los Angeles, San Francisco, Seattle, New York, Boston, Baltimore, Philadelphia, and Norfolk.

GARLAND STEAMSHIP CORP.

Central Building. Phone Van Dyke 0792.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street. Phone Main 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone Metropolitan 6140.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone Vandyke 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

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Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Puerto Colombia, Cartagena, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo Los Angeles, and San Francisco.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.

Freight Offices: Pacific Steamship Company.

agent. It was in this position that Mr. Thomas displayed his executive ability and piloted his company through the trying period incident to its retirement from the trans-Pacific trade. Becoming a member of the staff of the Dollar Steamship Line in 1923, Mr. Thomas took an active part in organizing the round-the-world passenger service, being appointed assistant general passenger agent. He is well known to traffic men throughout the United States and Europe.

Each of the new operating officials of the Oceanic Steamship Company enjoys wide personal popularity in Pacific Coast transportation circles.

ADMIRAL TAYLOR JOINS GIBBS

Gibbs Brothers, Inc., announce that arrangements have been effected whereby Rear Admiral David W. Taylor, C.C., U. S. Navy, retired, has become connected with the firm as consultant. Gibbs Brothers' headquarters are No. 1 Broadway, New York City. Admiral Taylor is one of the foremost authorities on naval construction and is recognized as such, not only in the United States, but throughout all maritime nations. From 1914 until January, 1923, when he retired, Admiral Taylor was chief constructor of the United States Navy and chief of the Bureau of Construction and Repairs. William Francis Gibbs, president of Gibbs Brothers, Inc., in speaking of Admiral Taylor, said: "We are to be congratulated in having consummated this alliance with Admiral Taylor. No man in the world stands higher in the field of naval design and naval architecture and no man has had a more brilliant career of expert achievement and authority than has been his. Admiral Taylor will be associated with us as consultant and we will have the benefit of his unquestionable abilities and fine achievements in those scientific and technical fields of naval architecture and ship design upon which depend the efficiency and success of American shipping."

WESTINGHOUSE

The quarterly report of the Westinghouse Electric & Manufacturing Company shows that orders received for the quarter ending June 30 last totaled \$44,432,200, as compared with \$40,031,000 for a similar period in 1924.

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MONGOLIA	Oct. 10	Oct. 12
FINLAND	Oct. 24	Oct. 26
MANCHURIA	Nov. 14	Nov. 16

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322 Citizens National Bank.
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Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
Central Building. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
Railway Exchange Bldg. Phone Broadway 2744.

SAILINGS—Every 10 days from Portland, Astoria, Seattle, and Tacoma to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

1008 Spalding Bldg. Phone Broadway 2503.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Pacific Steamship Company, freight agents.

Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

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ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.
Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

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Phone Seymour 8420.

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SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore and Portland, Me.

SAILINGS—Hawaiian Service.
Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, New York and Boston.

LUCKENBACH LINES

Empire Shipping Company, Ltd.

Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.
Every 7 days from Vancouver, Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, and Los Angeles to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, Astoria, San Francisco, Oakland and Los Angeles to Galveston, New Orleans and Mobile.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports, San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports, Panama Canal. Call at Oakland westbound.

A-H SAILINGS SOUTH ATLANTIC

J. R. Fitzgerald, agent for the American-Hawaiian Steamship Company, 215 Market street, San Francisco, has issued the following announcement regarding westbound Baltimore-Charleston sailings. In addition to the regular sailings every five days from Boston, Philadelphia and New York, the American-Hawaiian Steamship Company announces four sailings from Baltimore and Charleston to Los Angeles, San Francisco, Oakland, Alameda, Portland, Seattle and Tacoma, as follows: from Baltimore—S. S. Nebraskan, Aug. 30; S. S. Arizonan, Sept. 23; S. S. Hawaiian, Oct. 18; S. S. Georgian, Nov. 12; from Charleston—S. S. Nebraskan, Sept. 2; S. S. Arizonan, Sept. 26; S. S. Hawaiian, Oct. 21; and S. S. Georgian, Nov. 15. The line states that the possibility of a regular South Atlantic service will, to a great extent, be determined by the results obtained from the above sailings. Shipments originating at interior points should be consigned as follows: Baltimore, bill and consign to Pier No. 8, Baltimore & Ohio Railroad Terminal, Locust Point; Charleston—Union Terminal, care of Street Brothers.

LEONARD & DESCH TRAFFIC MANAGERS

John M. Desch, freight traffic manager of the Great Western Power Co. of California and the California Ink Co., Inc., announces the consolidation of his business with that of Fred T. Leonard, freight traffic manager, under the firm name of Leonard and Desch, in their new offices at 260 California street, San Francisco.

TRIBUTE TO CHAS. H. SPEAR

Shipping and commercial interests of San Francisco gave a farewell dinner to Charles H. Spear, retiring head of the State Board of Harbor Commissioners, on August 27 at the San Francisco Commercial Club. The function was directed by Captain C. W. Saunders of the Matson Navigation Company. Clay Miller, president of the San Francisco Chamber of Commerce, presided. The dinner was given as a mark of appreciation for the services rendered by President Spear to San Francisco in connection with his position as head of the Harbor Board. Spear leaves San Francisco September 1 to become general manager of Los Angeles Harbor.

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PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

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112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Trans-Pacific.

Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.

Weekly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila, Fort, nightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.
Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila), and Java.

NETSUJI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels.)

Sudden & Christenson, agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning direct to Portland.

OSAKA SHOSHEN KAISHA

Williams, Dimond & Co., Agents.
310 Sansome St. Phone Sutter 7400.

SAILINGS—San Francisco Service (FREIGHT ONLY).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (PASSENGERS AND FREIGHT).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
549-51 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Every two weeks between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—Monthly to China and Japan on steamers from the West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
403 Alaska Commercial Bldg. Phone Gar. 3899.
FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.
City ticket office: 1300 Fourth Ave.
General offices: 1519 R. K. Ave. So.

SAILINGS—PASSENGERS AND FREIGHT.

Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.
Central Building. Phone Elliott 7697.

FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
American Bank Building. Phone Elliott 1450.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSHEN KAISHA

Pier 6.

PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

SHELDON MADE SALES MANAGER

William K. Sheldon, Jr., widely known in Pacific Northwest shipping circles, was promoted recently by the Pacific Marine Supply Company from manager of its marine department to the office of sales manager for the corporation. Ross Cunningham will continue to direct the gas engine department. Aside from that line Sheldon will be in charge of the firm's entire sales department covering the marine and fishing fields.

HILL-HUBBELL AT SEATTLE

O. G. Quarre is now Seattle manager of Hill-Hubbell & Company, and is planning to enlarge the Seattle branch. Before going to Seattle in June, Mr. Quarre was in charge of the firm's marine department at San Francisco. The Hill-Hubbell organization is one of the largest on the Pacific Coast, its field including marine and industrial paints, bituminous coatings, and allied products.

MARINE SERVICE BUREAU HEADS

The Marine Service Bureau located at San Pedro and representing the various steamship companies and steamship organizations of the Los Angeles and Long Beach harbor districts, on August 14 elected the following officials: E. A. Mills, chairman, Crescent Wharf & Warehouse Co.; W. P. Bannister, vice-chairman, Pacific Steamship Company; John Olson, secretary, Chas. R. McCormick Steamship Company.

TOWBOAT COMPANIES CONSOLIDATE

The Harbor Launch & Towboat Company is the name of the new company formed through the consolidation of the Peterson Launch Company, San Francisco, and the Oakland Launch & Towboat Company. The company reports that the entire combined fleets of the two companies are engaged in active service.

NOTED SWEDISH ENGINEER PASSES

Axel Emil Janson, chief inspector, Aktiebolaget Gotaverken, passed away recently at Gothenburg, Sweden. Janson had a host of friends on sea-going motorships and will be greatly missed by the engineering officers of vessels making Swedish ports.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.
(Operating U. S. S. B. vessels.)
701-02 Transportation Bldg. Phone Tucker 5969.
FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yoko-



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Los Angeles--San Francisco--Puget Sound--British Columbia---*Monthly Sailings*

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VANCOUVER, B. C.
 C. GARDNER JOHNSON, Agt.

ORIENTAL

hama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone Broadway 7900 and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Weekly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila, fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick & McPherson, Agents.
Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—Monthly from Los Angeles direct to Yokohama, Kobe, Shanghai, Manila, Singapore, Sourabaya, Samarang, Batavia.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.
375 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

PORTLAND

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
702 Porter Bldg. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)
Columbia Pacific Shipping Company.
Porter Building, Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.
Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning direct to Portland.

PORTLAND-ORIENT LINE

Wallem & Company, agents.
Porter Building, Phone Broadway 1844.
SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd

Dodwell & Co., Ltd., agents.

22 Pine street, Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

TATSUUMA KISEN KAISHA

Walker, Ross, Inc., General Agents,
Yeaton-Coates Co., Agents.
Board of Trade Bldg. Phone Broadway 7574.

FREIGHT ONLY.

SAILINGS—Monthly between Portland and Kobe, Osaka, Yokohama, Nagoya, as inducements offer.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

812 Spalding Bldg. Phone Broadway 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Yorkshire Building, Phone Seymour 9576.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT.

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St., W. Phone Seymour 8014.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

MATSON PREPARES FOR TOURISTS

The Matson Navigation Company, in anticipation of greatly increased tourist travel to the Hawaiian Islands in the next few years, has started construction of a 400-room first-class hotel at Waikiki beach, which will be completed early in 1927. The hotel is to be named the Royal Hawaiian. It was designed by Warren & Wetmore, New York hotel architects. W. H. Sellander, general passenger agent for the company at San Francisco, has been in Hawaii for a month coordinating details of the line's passenger travel expansion program.

BANNISTER RECEIVES PROMOTION

W. P. Bannister, who has been superintendent of the Pacific Steamship Company's offices at Los Angeles harbor, has been promoted to assistant operating manager of the company, with offices in San Francisco. Mr. Bannister will take the place of Hugh Gallagher, who has resigned to join the Oceanic Steamship Company.

APPOINTS CHICAGO FREIGHT AGENT

The Los Angeles Steamship Company announced recently through J. W. Trefry, freight traffic manager, that R. C. Jorgenson has been appointed eastern freight agent of the company, with offices in Chicago. Mr. Jorgenson was formerly with the United-American Lines and prior to this with the Hamburg-American Lines and is well known on the east and west coasts and throughout the middle west.

NEW MANAGER FOR ALASKA LINE

James Griffiths has been appointed general manager of the Alaska Transportation Company, with offices at 502 Burke building, Seattle.

FLEET TO INSTALL RADIO

The Pacific Steamship Company has signed a contract with the Federal Telegraph Company to equip seventeen of its vessels with the latest type Federal marine C. W. radio sets. The installations are to start in September.

STEAMERS RENEW OAKLAND CALLS

After an absence of almost four years the Williams Line will return to Oakland in regular calls on the intercoastal service, starting with the freighter Tiger on September 3. The vessels will dock at the Lawrence Terminal.



Loop of the RCA
Radio Direction
Finder



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Radio Direction Finder

For Bearings in Heaviest Fog

RCA announces the Radio Direction Finder — a modern aid to navigation.

Highly Accurate—

In heaviest fog the RCA Radio Direction Finder is as accurate as sight bearings in clear weather. Its range is several hundred miles.

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There is no delay in taking bearings at any hour of the day or night.

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Built of highest quality materials and assembled and tested with minute care, the RCA Radio Direction Finder is dependable and durable.

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Fortnightly sailings

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Direct from Los Angeles to Hawaii

The round-trip from Los Angeles can be made for \$278.50, \$323.50 and \$406.00 and up—according to steamship and hotel accommodations selected—covering every necessary expense ashore and afloat.

Six or seven restful, intensely interesting days of recuperation for mind and body on the voyage to Honolulu, according to vessel selected; then a week of sightseeing, including a 3-day side trip to Hilo to see the Volcano, Lava Lakes, Giant Fern Forests and other wonders in Hawaii National Park—and finally the delightful return voyage to Los Angeles.

Three weeks—or as much longer as you can stay—for a supremely enjoyable vacation in this eternally enchanting land.

NEXT SAILINGS

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Sept. 26th—S. S. Calawaii

Oct. 10th—S. S. City of Los Angeles

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Pier 7, San Francisco

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FREIGHT ONLY.

SAILINGS—Monthly between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
 General Steamship Corporation, sub-agents.
 240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
 Fortnightly from Vancouver and Los Angeles to United Kingdom.

FURNESS LINE

Furness, Withy & Company, Ltd.
 Furness (Pacific), Ltd.

710 Balfour Building. Phone Sutter 6478-6479.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.

Fortnightly from Vancouver and Los Angeles to United Kingdom and Continent.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
 351 California street. Phone Sutter 6427.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, general agents.

260 California street. Phone Douglas 8040-1-2.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
 Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Co., general agents.

332 Pine street. Phone Sutter 3700.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmö, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Mediterranean Service.
 Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)

120 Market street. Phone Douglas 7510.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.

FREIGHT ONLY.

SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.

230 California street. Phone Garfield 2846.

For passengers, Phone Sutter 46.

PASSENGERS AND FREIGHT.

SAILINGS—North Pacific-European Service.

Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

SEATTLE

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.

Stoart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

823 Alaska Building. Phone Elliott 9104.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Monthly between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)

General Steamship Corporation, agents.

Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)

Furness (Pacific), Ltd.

Burchard & Fiskens, Inc., agents.

705 Arctic Building.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.

Fortnightly from Vancouver and Los Angeles to United Kingdom.

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.

SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.

Dexter-Horton Bldg. Phone Elliott 1464.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.

Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
 Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Company.

Hoge Building. Phone Elliott 5412.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmö, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.

Colman Bldg. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Mediterranean Service.
 Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)

204-206 Rainier Building. Phone Elliott 4944.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

GENERAL PETROLEUM BARGE EQUIPMENT

George E. Swett, sales engineer of the Western Engineering Company, Matson building, San Francisco, announces that his firm has been awarded the contract for various units of deck machinery and steering gear for the new General Petroleum barge, now under construction at the Union Plant of the Bethlehem Shipbuilding Corporation. This equipment will be of Allan Cunningham manufacture and will consist of electrically driven anchor windlass, the double wildcat, self-contained type, mooring capstan and steering gear. This equipment will be of the rugged type designed for service in Pacific Coast waters, which is favored by operators on this coast.

The Western Engineering Company has just delivered to the Bethlehem yard for the General Petroleum tanker Lio the largest commercial electric anchor windlass constructed. This windlass is arranged for two and one-half inch stud link chain and is equipped with a 75 horsepower water-tight electric motor good for 150 horsepower for short periods when conditions demand it. The windlass weighs around 50,000 pounds. In addition to the windlass, Western Engineering Company also supplied a 35 horsepower electric warping winch for powerful mooring work. The main thrust for the 3000 horsepower Bethlehem engine for the Lio will be of the Kingsbury type, as well as the main thrust for the San Francisco bay barge.

LINDE AIR PRODUCTS COMPANY

The Linde Air Products Company, New York, manufacturer and distributor of oxygen for welding and cutting, announces that its district sales office at Seattle is now located at 421 Railway Exchange building, 619 Second avenue. O. H. Davenport is district sales manager.

CEMENT FIRM CHANGES OFFICERS

The names of the new officers to fill the vacancy caused by the recent death of T. J. Hyman, former secretary and treasurer of the Universal Portland Cement Company, were recently announced by B. F. Affleck, president of the firm, following a meeting of the board of directors. E. B. Harkness was elected secretary; A. W. Carlisle, treasurer; and O. N. Lindahl was named assistant secretary, which office he will occupy in addition to the position of auditor.

Fiji

ISLANDS

Via HONOLULU and
SAMOA to SUVA and
AUSTRALIA

THE Oceanic Steamship Co. is operating a passenger and express freight service from San Francisco direct to lovely Suva, chief port of the Fiji Islands, with sailings Sept. 8-29 and every 21 days thereafter.

This service makes directly available to the American tourist a different vacation land—alluring, picturesque, and restful, but with modern hotels, golf courses, and fine motor roads. To the commercial world, the new 15 day service to Suva is a distinct time-saver.

The Oceanic Steamship Company of

**The short route from America to
the South Seas and Australia**

Its comfortable liners S. S. Sierra, S. S. Sonoma, S. S. Ventura (rated Lloyd's 100A1) sail from San Francisco, touching at Honolulu, Samoa, Suva and thence direct to Sydney. The time of the complete voyage from San Francisco to Sydney, Australia, remains the same—19 days.

For passenger and freight tariffs apply to

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NORTH PACIFIC COAST LINE

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The Pioneer Refrigerator Service

Fast Freight and Passenger Service between San Francisco, Los Angeles Harbor, Portland, Astoria, Seattle, Victoria and Vancouver, and Liverpool, London, Rotterdam, Antwerp and Hamburg.

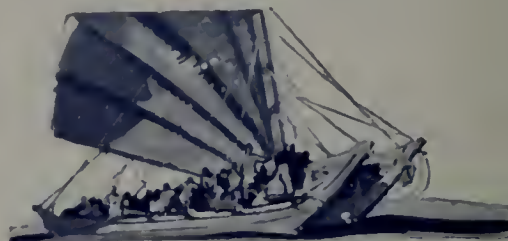
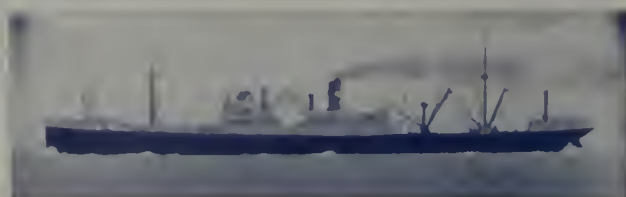
All Vessels Equipped With Refrigerators for Transportation of Fish, Fruits and Other Perishable Cargo

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HOLLAND-AMERICA LINE

120 Market Street

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hawaii

The Discoverers—two hundred years before Columbus

FROM the East they came—according to old Hawaiian tradition—across thousands of miles of open water in their frail canoes.

The leader of this legendary expedition was the chief, Hawaii-loa, who came from some distant land, probably what today is New Zealand.

They brought with them their language, their religious customs, seeds of plants from their native soil, but finest of all, to this land of snowy clouds in azure skies and palm-fringed bays they brought a people of sunny disposition, of open-handed hospitality and native charm.

"The happy isles," Stevenson called them. Here is combined the atmosphere of the Orient and the tropics—all the romance of nights made glorious by a golden tropic moon—days of gentle warmth and incomparable color.

What a spot for a holiday! And how easy to get there. Every week luxurious Matson liners leave for a tour of three perfect weeks in Hawaii. Twelve to four teen days at sea. Ashore, the finest hotel accommodations to be had anywhere.

About \$270 is the minimum charge, all-inclusive.

The new Matson liner, the MALOLO (Flying Fish), now under construction, will be when completed, the largest, fastest high-powered ship ever built in the United States—the finest ship on the Pacific. The MALOLO will be completed early in 1927.

matson

Navigation Company

Matson Navigation Co.,
225 Market St., San Francisco
I am interested in a trip to Hawaii.
Please send me particulars.

Name _____

Address _____

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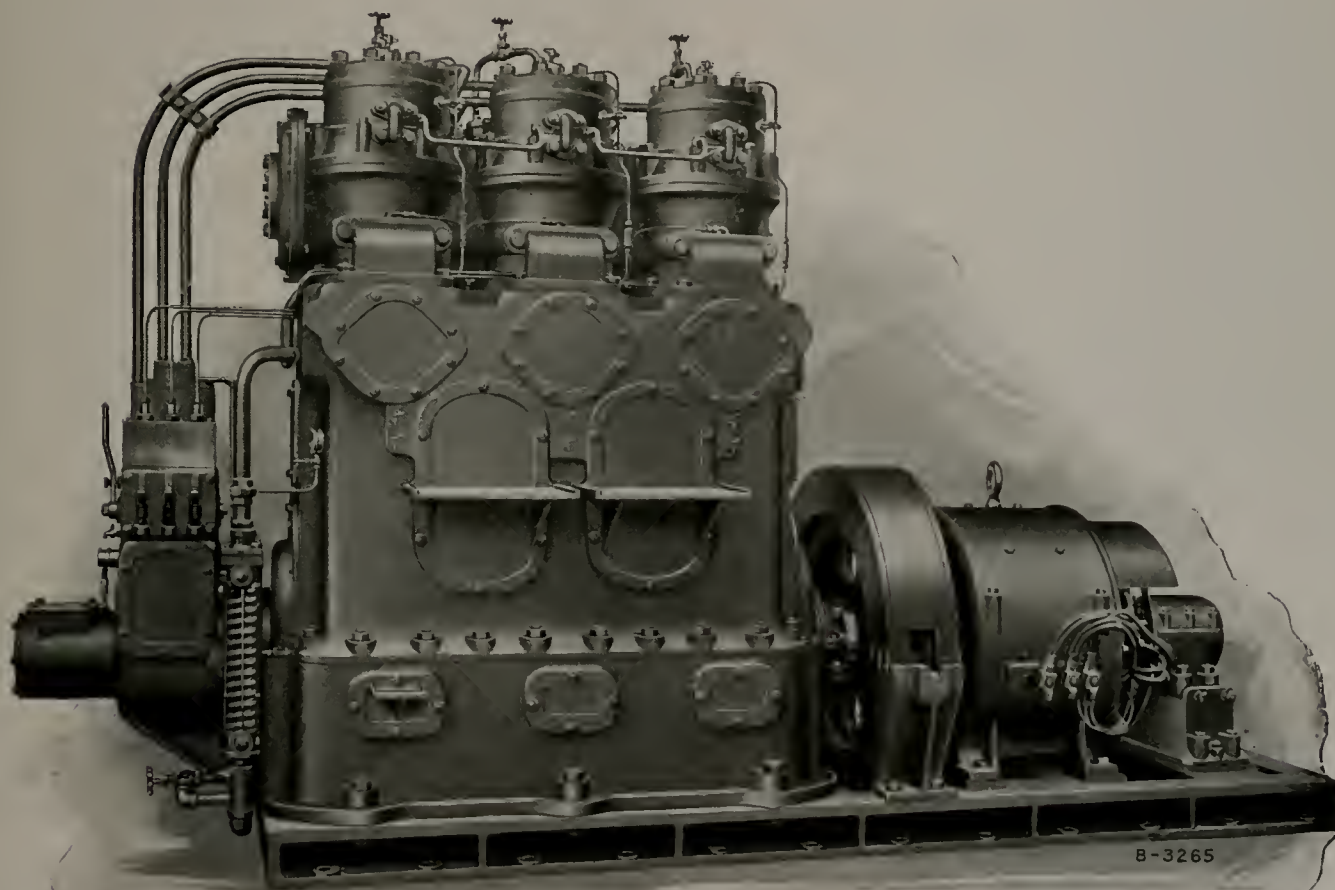
They know good oil engines

THE Ford industries have a well-earned reputation for knowing the value of the equipment they buy, and for using only the finest and most modern type of machinery, in all their various branches of manufacturing and transportation.

The Ford Motor Company operates a fleet of cargo carriers with the usual efficiency that has made the name of Ford known to all inhabitants of civilized countries. Three recent additions to this fleet are "Henry Ford II", "Benson Ford" and "East Indian."

These vessels are each equipped with Worthington Diesel two-cycle solid-injection engines each directly connected to a generator for general power and lighting service. The operation of the ships depends on continuous reliable performance of these engines. Without this the ships cannot navigate.

Worthington Diesel oil engines operating auxiliaries are displacing steam on vessels of all types.



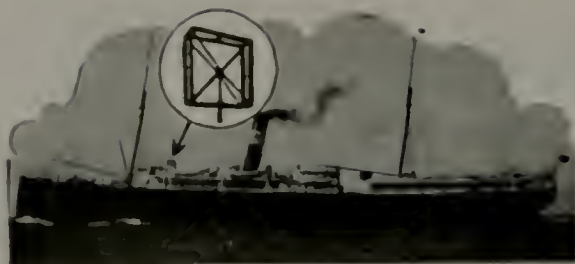
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52253

PLEASE MENTION PACIFIC MARINE REVIEW



SS. Rose City of the McCormick Steamship Company has the protection of the Kolster Radio Compass

Dead Ahead !

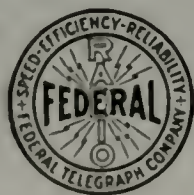
Saved by the Kolster Radio Compass

A dense fog—other vessels in the vicinity—and yet safe! That's the advantage of the Kolster Radio Compass.

Radio bearings are taken—courses are altered—ships pass in safety. There are many such instances of record that point to the Kolster Radio Compass as the greatest aid to navigation.

How soon will your vessels have this protection?

Bulletin 25 will interest you



FEDERAL TELEGRAPH COMPANY

SAN FRANCISCO

25 BEAVER STREET, NEW YORK CITY

Japan-China Representatives:

Sperry Gyroscope Co., Mitsui Building, Tokio



JAPANESE-AMERICAN TRADE

By K. SHIBAGAKI,

Manager, Mitsui & Company, Ltd.

TRADE between United States and Japan is not competitive, it is complimentary. Japan has materials which the United States seeks and the United States has products which Japan requires. They are not rivals in the markets of the world. Cotton, mineral oil, machinery, iron, steel, and wheat are the principal exports of the United States. Japan's are silk and tea. Blessed with the absence of desperate rivalry and competition is the economic reason for the friendly feeling between the two nations.

In 1909 value of Japan's purchases from United States was twenty-six million dollars. In four years it increased four times and in fifteen years increased one thousand per cent.

Japan's Best Customer

Few people fully realize the extent of Japan's economic relations with the United States. Seven per cent of Japan's total national wealth is annually engaged in foreign trade, whereas only two per cent of United States' national wealth is so engaged. Theoretically, therefore, Japan is three times as much interested in international commerce as is United States. Forty-five per cent of Japan's exports go to the United States, making your country by far Japan's customer. China is second, taking twenty-four per cent. India third with six per cent, and France and Great Britain, five and three per cent, respectively.

Five commodities exported by Japan account for 66 per cent of its total export trade. Of these raw silk ranks first, constituting 41 per cent of all exports. Ninety per cent of this raw silk is sold to the United States. The American market for raw silk, therefore, provides Japan with 36 per cent of its export trade. There are few countries in the world whose economic relations of one to the other share so large a percentage of one another's trade.

Of Japan's other principal exports, America takes a quarter of the silk goods, a third of the pottery, and ninety per cent of the tea. Japan sends to the United States a number of commodities of lesser value, including camphor, straw braid, waste silk, and beans.

Japan Buys in America

United States is Japan's principal source of supply, 31 per cent of Japan's imports coming from your country. The United States supplies over twice as much in value to Japan as any other country; India being second with 14 per cent; Great Britain third with 13 per cent; China fourth with 10 per cent; Germany, 6 per cent; Australia, 4 per cent; and so on down the line.

Raw cotton is Japan's principal import from the United States. Your country supplies 41 per cent of Japan's machinery; 70 per cent of the lumber; 60 per cent of Japan's iron bars, rods, and plates; 80 per ammonia; and 80 per cent of our construction materials. Eighty per cent of Japan's automobile imports are of American make. Most of these commodities are competitive in the sense that other countries can supply them. Nevertheless Japan is United States' best customer for the products which have been mentioned.

If Columbus had discovered America on the Pacific side instead of on the Atlantic side, the markets of Asia would have been much more developed than they are. Heretofore Europe has been United States' outlet for its products. Now your nation is awakening to

its opportunities to the westward. These ambitions have brought you gentlemen to this convention in Seattle—America's nearest port to the Far East. Your attention is now attracted to the potentialities of the Far East in trade. It is not amiss to mention opportunities for investment of American capital. With the gaining confidence of each year in the safety of these investments and the interlocking of capital and establishment of branch factories, both nations are bound to profit.

Japan's Great Progress

In contrast to your own country, which is considered to be the wealthiest in money and natural resources, as well as the most alert in progress, picture a nation across the Pacific, hardly the size of the State of Washington, with a population of seventy millions. The capital city, Tokio, has nearly twice as many people as the whole State of Washington. It has been scarcely half a century since Commodore Perry opened Japan's door to commerce. Your country's commerce is from three to four times as old as ours. Japan has been vigorous to take up western civilization. We are very proud that we have done it so fast and so well. With the passage of time Japan has tended to become more and more industrial and to interest itself in foreign trade. Prior to that it was concerned in domestic matters and agricultural pursuits. New industrial progresses accompanied by demand for new types of goods found our country lacking some of the essential commodities of modern industry. To obtain these we have been compelled to buy from the countries more experienced in manufacture. In order to balance these high valued imports it was necessary to increase our interest in foreign trade and create a demand for our exports.

Foreign trade made great progress in twenty years. The total foreign trade of Japan in 1904 was 816,000,000 yen. In 1924 it amounted to 3,677,000,000 yen, of which 1,677,000,000 yen were exports and 2,000,000,000 yen imports.

In the conduct of this mutually advantageous trade and on the basis of equality of opportunity it is necessary that business men should meet to discuss their common problems. In no other way can different viewpoints be understood and the many commercial problems analyzed and solved. Stimulation of foreign trade and understanding between nations is brought about through commercial channels.

ECONOMIC ASTROLOGY

IF human progress maintains a fairly constant gait during the next decade and avoids such cataclysmic pitfalls as war and pestilence, the world's foreign trade will probably cross the \$100,000,000,000 line about 1935.

This estimate was made by the Department of Foreign Commerce of the Chamber of Commerce of the United States, which frankly admits that it partakes of the nature of economic star reading, in response to an inquiry. It arrived at the conclusion in this way:

"For eleven years prior to 1914 the yearly increase in world foreign trade was at about the same rate as interest compounds annually at six per cent. Disturbed conditions during the war and for several years after the armistice upset the pre-war yearly gain. A semblance of stability, however, was reached in 1923, when it was estimated the total world export trade amounted to \$24,000,000,000 and world imports approximated \$26,000,000,000.



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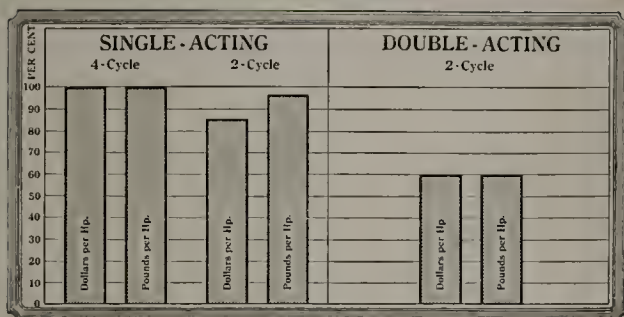
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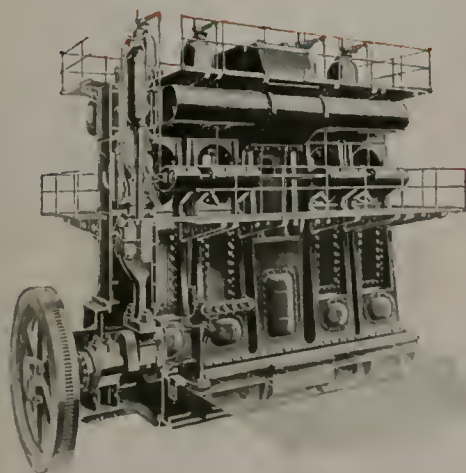
OCTOBER, 1925



These figures taken from public letting, U. S. Shipping Board
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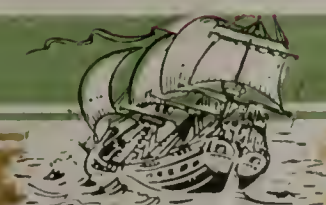
The new Worthington engine has extended this limit by cutting down the space, weight and cost—all of which contribute to reduce the fixed charges, and make operation economical over a greater range.

Simplified construction in this new engine has also reduced upkeep and maintenance so that, all-in-all, the economic limit of the Diesel oil engine has been considerably extended.

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The Union Carbide and Carbon Research Laboratories, Inc., occupies almost a city block of floor space in this large building in Long Island City. Floor space, however, means little in a research laboratory if men and equipment are lacking. The equipment is as complete as that of any laboratory in the United States and the caliber of men is indicated by the fact that one of chemistry's most coveted prizes—the Perkin Medal—was recently awarded to one of the staff.

THE Union Carbide and Carbon Research Laboratories, Inc., at Long Island City, is really manufacturing standards for the oxy-acetylene process.

New applications of the process usually originate in the field. They could be developed by the trial and error method and passed from one welder to another by rule of thumb instruction.

The Linde Company, however, submits such new applications to its research laboratory. Here, not only is the weld tested, but the correct procedure worked out so that it is metallurgically sound. Applications perfected in the Linde laboratory work—not occasionally, but *every time*.

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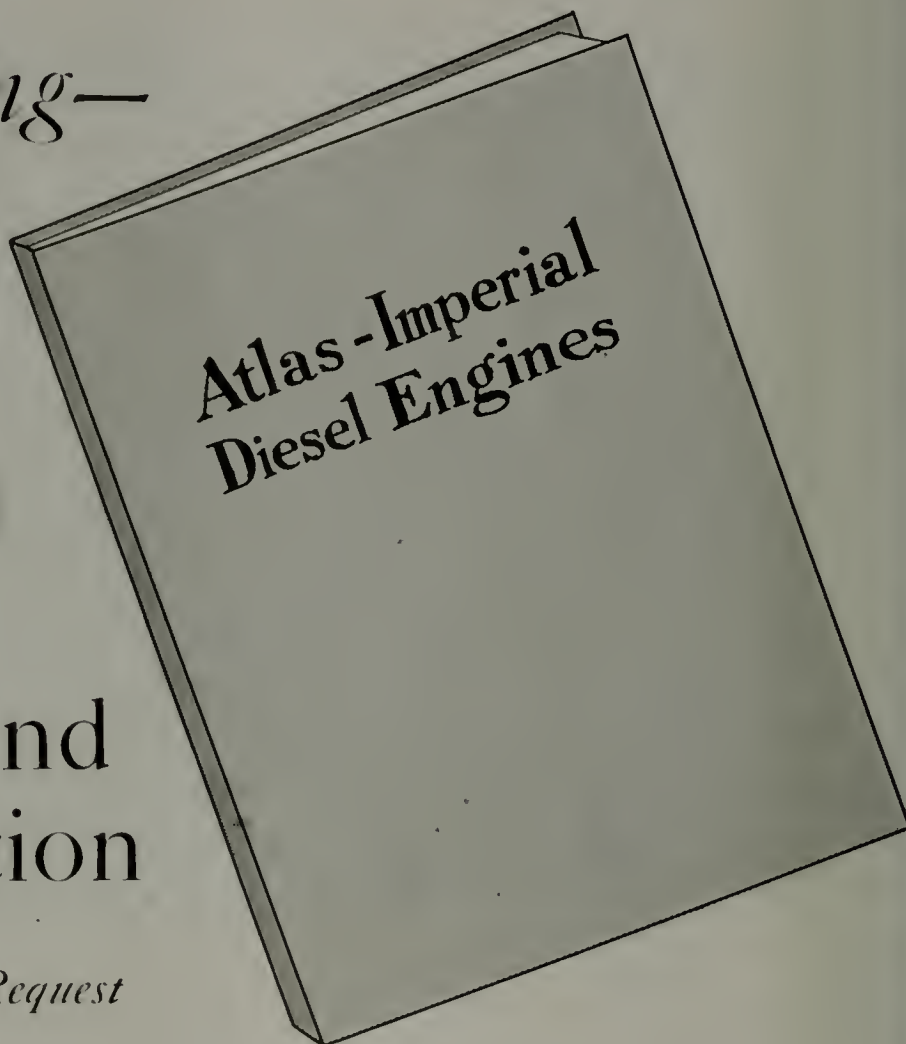
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Pacific Marine Review

The National Magazine of Shipping

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of the Pacific

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Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager.

Motorship Building

LOYD'S returns, always interesting as well as accurate, are now of greater interest than ever to motorship advocates. The figures for the quarter ending June 30, 1925, as compared with the same period for 1924, show an increase of 39 per cent in the motorship tonnage and a decrease of 32 per cent in the steamer tonnage under construction. When compared with the tonnage under construction in June, 1923, this year's figures show a decrease of 50 per cent in steamship and an increase of 180 per cent in motorship building.

Excluding steamers on which work had been suspended, the steam vessels under construction on June 30, 1925, aggregated 1,085,843 gross tons, while motorships under construction totaled 1,129,912 gross tons, thus exceeding steamer tonnage for the first time in the history of shipbuilding. These figures include only vessels of 1000 gross tons and over. If smaller craft were included, the relative proportions would be even more favorable to the motorship.

Lloyd's returns also for the first time classify the type and horsepower of engines to be installed in vessels building in the world's shipyards. Here, again, the oil engine is way in the lead, with 808,264 indicated horsepower as against 559,970 indicated horsepower for steam reciprocating and 353,144 indicated horsepower for steam turbine installations.

Summarizing Lloyd's returns of vessels on order, as well as those under construction, we find approximately 918,000 indicated horsepower of diesel engines. Four-cycle, single-acting engines account for 438,000 of this total; two-cycle, single-acting for 213,000; four-cycle, double-acting for 211,000; and two-cycle, double-acting for 56,000.

Standardization on a few types is necessary for commercial reasons, but as yet there is very little sign of any concerted effort in that direction.

In Denmark, 94.5 per cent of all tonnage building is diesel, and in Sweden 92 per cent. Italy's construction program shows 63.5 per cent motorship, and Germany rates 77 per cent, with Holland 63 per cent, and Japan 46 per cent. Outside of Great Britain, these constitute the world's most active maritime countries, and all of them are rapidly regaining the old trade routes lost in the late European disturbances.

The work of Germany in rebuilding her mercantile fleet is especially noteworthy and should be carefully studied by American owners. The German ship owner, with his usual long-sighted thrift, was quick to grasp

the benefits in reduction of cost and weight by speeding up the diesel engine. Trunk piston, short stroke, high revolution engines working through mechanical or hydraulic gearing make up a combination lending itself very readily to standardization and manufacture on mass production basis. Germany now has many fine motorships in operation, with such power plants and they are giving very satisfactory service.

The Shipping Board conversion program is going forward with such speed as governmental red tape will permit, and we hope to see a few more American motorships at sea before another year has passed into history. In the meantime it behooves American private owners to take notice of the improvements being installed by their overseas competitors. At present these all point to the conclusion that aside from routes where it is advantageous to burn coal, the diesel engine will be supreme at sea.

The Thirteenth National Foreign Trade Convention

MUCH comment has been made on the fact that the National Foreign Trade Council has chosen Charleston, South Carolina, as the site of the Thirteenth National Foreign Trade Convention, to be held April 28, 29, and 30, 1926.

The reasons for this choice have been made the subject of a press release issued by O. K. Davis, secretary of the National Foreign Trade Council, during the past month. These are, briefly, the opportunity afforded to study the tremendous foreign trade and industrial development which is going on so rapidly in the New South, Charleston being the strategic port of the South Atlantic. Three South Atlantic ports, Charleston, Savannah, and Jacksonville, are now fifteenth, sixteenth, and seventeenth in rank as regards tonnage of imports into the United States, and these three ports have shown the most concerted development in foreign trade of any ports of America in recent years. In fact, a keen foreign trade activity is notable all the way from Baltimore south to Key West, along the Gulf and up the Mississippi to St. Louis. This convention at Charleston will provide a meeting point for a profoundly interesting survey of the movement of America's international business.

It will be remembered, in this connection, by students of American commercial history, that Charleston was once the premier port of America. This Southern city claims the oldest chamber of commerce in the United States, the oldest museum, the oldest formal gardens, the terminal of the oldest railway,

and the South's oldest daily newspaper; and yet during the past few years it has spent eleven millions on modern port terminals, has built two new modern hotels, and possesses the only first-class modern navy yard in the United States between Hampton Roads and San Francisco Bay. During the latest recorded fiscal year, Charleston has developed from thirty-fourth to twenty-fourth place in gross tonnage among American ports.

It is therefore confidently predicted that this Thirteenth Convention will be one of the most interesting and profitable in the history of the National Foreign Trade Council.

The American Merchant Marine

IN preparation for the opening of Congress, many efforts are being made to crystalize the sentiment of America toward a solution of the many questions faced by the Federal government in connection with merchant marine matters. One of the most interesting and by far the most comprehensive of these efforts is that of the National Chamber of Commerce.

The Transportation and Communication Department of the Chamber, through its advisory committee, has been considering the merchant marine question for some time, and several months ago this department reported to the board of directors that the time was ripe for a survey to determine the attitude of the business men throughout the country as to the steps which should be taken to set the whole merchant marine problem on a proper basis.

The board of directors then authorized the holding of a merchant marine conference and set the date of this conference in November, 1925. In preparation for this conference, four representative committees are studying the four principal phases of the problem.

The first committee takes for its study "The Relation of the American Merchant Marine to American Foreign Trade and the National Defense." This committee is under the leadership of General James D. Harbord, president of Radio Corporation of America.

The second committee takes the subject "Government Regulatory and Administrative Relations to the Shipping Industry." Judge Edwin B. Parker is chairman of this committee, which will report on regulation of coastwise services, operation of the Seaman's Act, and revision of the navigation laws and the administrative organization of the government in relation to the shipping industry.

The third committee considers "Government Aids to Shipping" and is under the leadership of A. J. Brosseau, president of Mack Trucks, Inc.

The fourth committee, led by C. W. Lonsdale of Kansas City, has the question of "Disposal of the Government-owned Ships."

Teams from these various committees have been touring extensively throughout the United States, holding round-table conferences with business men interested in shipping matters and taking elaborate and valuable first-hand testimony as to the opinions held in different sections of the country. From the

opinions expressed at these various meetings it is expected that much valuable information will be gathered to guide the committees in their conferences in Washington to formulate the united business opinion of the country on these various questions.

The findings and recommendations of the conference and the action of the chamber's membership thereon are to be published and brought to the attention of the Administration and of Congress, and should be extremely valuable in clarifying the mind of Congress on many of these rather intricate and technical problems. Certainly if the consensus of opinion of the common sense business men of the nation can be concentrated on the merchant marine problem, that problem will be solved.

World's Most Economical Transportation

ON June 6, 1925, there berthed at Sparrows Point, Maryland, the German-built, Swedish-owned, American-employed, motor ore carrying vessel Svealand on her maiden voyage carrying iron ore from Crux Grande, Chile, to Baltimore. This vessel and her sister ship, the Amerikaland, are the two largest motor cargo vessels yet built, having a dead-weight capacity of 21,000 tons. They were built at the Deutsche-Werft, Hamburg, and are powered with twin screw A. E. G. Burmeister and Wain machinery on a guarantee of 11.5 knots an hour sea speed, with 6600 indicated horsepower.

The Svealand left Hamburg for Chile via the Panama Canal on April 11. At Crux Grande she loaded 20,688 tons of ore, which, in addition to fuel, water, provisions, and inventory, gave a full load of 21,568 tons. With this load, on a mean draft of 33 feet, she ran to Balboa at an average speed of 11.6 knots on 6010 indicated horsepower, thus beating her builders' guarantee. The average fuel consumption on the total trip of 12,500 sea miles was 0.39 pound per brake horsepower hour for all purposes. Twenty-four hours after arriving at Sparrows Point she was ready for sea again. The entire voyage was accomplished without machinery trouble of any sort.

The fuel consumption per ton mile figures at 0.007 pound, which is said to be the world's record low figure in the relation of fuel cost to transportation. Translated into the best known American standard of transportation—fuel measurement—the Svealand did better than eleven hundred ton miles to the gallon of fuel oil, and that is going some.

The World's Largest Motorship

IF our information is correct, Venice, Italy, is the site of the first application of the diesel engine to marine propulsion, and the experiment occurred in the opening year of the present century, when a Sulzer engine was fitted to a launch belonging to the Italian Navy and was operated with considerable success, and possibly is still so operating.

For this reason it is with a great deal of interest that we learn in recent advices from Europe that the Navigazione Generale Italiana has ordered from the

Ansaldo shipyards a large passenger liner to be equipped with diesel engines. This vessel is to be known as the *Augustus* and will be the largest and fastest motorship in the world. She will be of 31,500 gross tons measurement, having four propellers with a total shaft horsepower of 20,000 and a sea speed of 21 knots. The shaft horsepower of the principal motors and auxiliaries will give the large total of 32,500. This vessel is to be used in the Mediterranean-Atlantic trade between Naples and New York and will be equipped with modern high class passenger accommodations to take care of 880 first and second cabin passengers and 1260 third cabin passengers. It will be evident that no expense is to be spared in the preparation for passengers on this vessel when we consider the steamer now under construction at the same yard and for the same service. This vessel, the *Roma*, is being equipped with 125 private baths in the first-class and is to cost over seven million dollars.

The Navigazione Generale Italiana has ordered also two motorships of 15,000 tons of 15 knots speed for Australia and South Pacific service out of the Mediterranean, and as motorships now building in the world's shipyards include two of 21,700 gross tons and two of 23,000 gross tons, the diesel engine is thus being used for marine propulsion in the vessels of as high a class and as large a displacement as are at the present time considered advisable in a commercial sense by the marine engineers and naval architects of the world.

Steam in Marine Propulsion

WHILE it is true that at the present time the bulk of new shipbuilding in the world is rapidly going to diesel engine propulsion, it would be a great mistake to figure that steam is dead. Sir Archibald Denny of Dumbarton, Scotland, in an address before the Marine Engineering Section of the British Society for the Advancement of Science, recently reviewed the progress of marine engineering for the past fifty years. Sir Archibald has had large experience during that time with reciprocating engines, steam turbines, diesel engines, and combination steam and diesel engines, and is considered one of the world's great experts in combining marine engineering with naval architecture for the best over-all results.

It is noteworthy in this connection that his father, Dr. Peter Denny, presented, forty or fifty years ago, a paper on exactly the same subject to the same society. Dr. Peter Denny's paper went back to the days when Scotch marine boiler manufacturers were "working hard to produce a marine boiler that would keep in boiled potatoes."

The close of Sir Archibald's paper recites the present work being carried on by himself and Sir Charles Parsons in the making of an experimental steamer for operation on the Clyde, in which steam will be generated at 550 pounds pressure per square inch with a temperature of 770 degrees Fahrenheit and in which, by the use of the best practice in superheating and in air preheating and with all of the refinements known to steam engineering, they hope to achieve an

over-all thermal economy which will be very comparable with that of ordinary diesel practice.

Pacific Marine Review has always maintained the editorial standpoint that one of the great values of the diesel engine to marine propulsion has been the spurring on of steam engineers to greater efforts in producing economy. We shall watch with a great deal of interest the outcome of this experiment.

Two Notable Diesel-Electric Tugs

J. H. PATRICK, president of the Wilmington Transportation Company, Wilmington, California, recently placed through Frank G. Bryant, California representative of the Winton Engine Company, an order for two complete sets of Winton-Westinghouse diesel-electric propulsion machinery for two tugs building at William Muller's plant at Wilmington. This order is a direct testimonial to the excellent records made in service by the Winton-Westinghouse equipment on the two diesel-electric tugs which the Wilmington Transportation Company has been operating at Los Angeles harbor for nearly two years.

The two new vessels are to be named *Milton S. Stewart* and *John H. Patrick*, and will be 90 feet in length, built of wood to the highest Pacific Coast standards. Each tug will have two 300-horsepower Winton full diesel engines of the air injection, 6-cylinder, 4-cycle type, with cylinders 10 inches diameter by 14 inches stroke. This engine is designed especially for direct connection to an electric generator and the speed governing mechanism combined with heavy fly wheel and perfect balance enables it to function very efficiently in maintaining constant voltage under varying load.

Each engine is direct-connected to a 175 kilowatt Westinghouse direct current generator and a 30-kilowatt Westinghouse exciter. These generators are electrically connected through Westinghouse-Ward Leonard control to a 430 shaft horsepower Westinghouse propulsion motor of the double armature type. This motor drives the single screw at 125 revolutions a minute running light.

The control system on these installations is to be unusually elaborate. In addition to control station in the engine room there will be two separate complete driving motor controls in the pilot house and one on top of the deck house just aft of the engine room hatch. This latter is for use in connection with the numerous draw-bridges on Los Angeles inner harbor channels. The position of the control will give an open, unrestricted view of draw-bridge signals to tow-boat and vice versa.

In addition to the complete propulsion machinery, the order from the Wilmington Transportation Company includes the following auxiliaries:

Two 15 kilowatt Winton-Westinghouse gasoline engine electric generating sets for supplying light and auxiliary power;

Two Winton motor-driven air compressors;

Two Winton motor-driven fire and bilge pumps.

It is stated that these tugs will be used to tow barges of silver ore from the new mines on Catalina Island to the smelters on San Francisco Bay.

"THERE SHE BLOWS!"

Some Whaling Experiences North of Seventy in the Early Eighties

By SEA FLAME

AWAY back in the early 80's, whaling was of considerable importance at the port of San Francisco. About that time the Pacific Steam Whaling Company started building several steam whalers. Among them were the Orca, Ballena, Beluga, and Narwhal. Of the latter the writer will particularize. She was built at San Francisco, by the firm of Dickie Brothers, and honestly constructed; was 150 feet length, 32 feet beam, and 17 feet depth. Her net tonnage was 389; gross, 523. She was bark rigged and had the old-fashioned raised poop and deck, which were very well fitted for the officers. The captain's quarters were most elaborate, though all were comfortable and roomy.

Her hull was built very strong, for when in northern waters she had, like all the others, to battle with ice floes. Her stem was armored with a heavy bronze casting coming well down under her forefoot, which was cut away so that she might rise up onto the ice, and by her weight crush through it. Her engines were of the compound type, built by the Risdon Iron Works, and designed by the late George W. Dickie. This gentleman, so well known to the old-timers, learned his profession in Scotland and his younger days were devoted mainly to locomotive work. This early training later showed its effect in the type of his engines, he being one of the first to use the locomotive cross-head and guides on marine work. However, the result was fine, for with her long connecting rods and most liberal bearing surfaces, the old Narwhal's engines would run with little repairs and their weight and sturdiness made them ideal for the rough work of whaling in northern waters. Her boiler was of the Scotch type, with two furnaces, and a liberal steamer. Coal at that

time was the only fuel, and she carried a big supply of it leaving port.

In addition to the coal, allowance had to be made for provisions and stores in large quantities, and at sailing time the old vessel was crowded below and above decks with all sorts of duffle. A crew of ten after-guards and some forty to fifty forward filled her decks. To these could be added the crimps and runners at that date always present on such an occasion as sailing day. Most of the crew were more or less under the influence of waterfront whisky, and it was customary to have the vessels towed to sea and given a good offing, when the officers could handle her until the crew got sobered up enough to be of some help.

It was also the rule, then, to sign articles calling for a sixty-month cruise, the five years being taken up with the business of catching whales and trading. Most of the personnel were on a "lay"—that is, they received a proportionate sum as wages comparing to the total amount earned by the vessel. The captain had the highest lay, generally about one-fourteenth. The only members of the crew that had a stipulated wage were the two engineers, \$125 and \$90 per month being theirs, even though the ship lost money on the voyage. They usually had, in addition, about a hundred-and-tenth lay.

The writer remembers going out as chief engineer on the Narwhal some thirty years ago. The engine room crew consisted of two engineers and two firemen. When we were towed out through the Golden Gate, the black gang were sober, but outside of a few of the officers and a boat-steerer or so, all were more or less fuddled. However, we got away all right, and were steaming along by ourselves before eight bells



Two views of a modern fur trading schooner in the Arctic. These pictures give a vivid idea of the nature and extent of the ice fields and of the difficulties of navigation in the polar regions.



in the evening watch. I had this watch, and at midnight, or shortly before, tried to get the deck folks to assist in getting up the ashes. The officer on watch was a bit off, and so the first assistant and myself, with the help of the firemen, got the ashes overboard. The next day a hard-boiled first and third mate got the crew into shape, and things began to settle down.

Gear had to be better stowed; boats securely lashed; and the decks cleared up. This took some time. The wind also hauled to the south, and sail was made, and the engines stopped to save fuel. At this point it may be explained that the propeller was of the two-blade type, built onto a hub, all bronze. When sailing, the propeller was stopped in the vertical position, marks on the turning gear showing this, and the gear locked. The big, wide stern-post kept the blades of the propeller from dragging, and with all sail set and a good breeze, the bark could make 12 to 14 knots, as her lines were very good. The first time sail was set it was a slow process, accompanied by harsh words and profanity, as the majority of the crew did not know a backstay from a figurehead. But the boat steerers and lesser mates taught with rough hands and words, and in a few days our crew could do very well.

Each day we were more and more in order, and slowly getting up toward Unimak Pass, which we entered, under steam, early one morning thirty days after we had left San Francisco. The Narwhal was anchored in a sheltered cove for a day or two, and we had fishing parties out, the boats coming back laden with splendid Alaska codfish. The weather being cold, the fish was left on decks to freeze, though we ate quantities of it at the time. Fried cods' tongues are fine eating after a thirty-day sea voyage. All the waterfront booze was gone, and hard work and open air gave an appetite to all hands.

After a day or so at anchor, we got under way and steamed north. We soon struck floe ice, but not heavy, the patches being detached fields of small area, the largest being perhaps a mile or so across. Young seals were asleep in vast numbers on the floating ice, and their mothers were foraging for fish near by. At all times some of the little ones were splashing off the ice and swimming near the mothers. We did not molest them, as we were out for larger game.

Still heading north, in a few days we struck heavier ice, and then it was fun to buck the opposing floes. The "old man" and the mate would take the crow's nest to con her through the water lanes between the floes, always with a view to getting further north. By twisting and turning, and taking advantage of openings, fairly good time was made, the engines being kept going strong. Sail was also made if the wind was the slightest hit favorable. Soon we reached a place where it seemed no thoroughfare might well be ordered. As far as the eye could reach there was not a break in the white expanse of snow-covered ice. As we were well ahead of time, we tied up to the edge of an open floe to wait a break-up.

The sea was smooth as a millpond, as a hurricane, even, could not have broken the smoothness of the vast white field. Here we stopped for a few days, the deck hands being kept busy overhauling boat gear and getting whaling tools ready. The engineers did some needed overhauling jobs, and so passed the hours. Night was very short, as we were getting well north. Soon the ice commenced to grind again, and the order to get under steam was given. A small opening had

been sighted from the mast-head, away out to the northwest. The wind was fairly strong from the southward, so the Narwhal was slowly steamed back a mile or so from the ice, while all sail was being made. When this was done, the captain asked for all best speed below and turned her bow toward the solid field which lay between us and the open water north.

With steam and sail the old girl got up quite a respectable gait. I had been warned by the older hands to look out when she hit, and had all secured below. The stewards and cooks blocked off all breakable ware, and lamp chimneys were taken off and made safe. Soon she hit, and the crash was terrific, to say the least. Her momentum carried her well out of the water forward, and with a reel and swirl she broke down through the thick ice, splitting a crack ahead for nearly a mile. Into this crack she was forced, and wind and steam urged her strongly through this wedge, the crack giving more and more. In an hour or so we were in comparatively open water again. After a while this sort of thing became familiar to us, and when off watch we would not even wake up when she commenced to buck through a floe which barred progress. The ice alongside did not cut into the sides, as the hull was completely sheathed with Australian iron bark, a wood that seems to be able to resist icecutting even better than steel.

When doing the bucking care had to be taken that the engines could be stopped instantly, as a broken jagged piece of ice might wreck the propeller. The stop and go-ahead signals came as thick as they do in traffic crowded city thoroughfares, but we were lucky and did not get a twisted blade. However, had we done so we were prepared to make repairs, even though at sea and thousands of miles from a drydock. The Narwhal, like all steam whalers, had a cofferdam stowed on the main deck. This was a wedge-shaped box of 4-inch planks built by the shipbuilders, well braced and fastened. Its edges were covered with padding held there by canvass, which formed a cushion all around the edges where it fitted to the shape of the after part of the vessel. It was of a size sufficient to permit of working in it, and if needed was lowered over the stern and hove tight up against the run. A sea connection to the pumps was arranged for, and when the water was pumped out the cofferdam provided a dry and safe workshop for propeller repairs. Plenty of spare blades were carried, as also a spare hub and tailshaft, but such was the integrity of construction in those days that we did not have occasion to use any of this gear, although she got some strong wallops at times while ice breaking. Sometimes, if the engines were not stopped quickly enough, they would bring up with a bang, as a hard chunk of ice fouled the propeller at the stern. A kick astern would clear the wheel, and if she went along all right afterwards, it was presumed all was well.

After several days of this sort of thing we reached comparatively open water off Holy Cross Bay, on the Siberian side, and commenced cruising for whales. In future issues of Pacific Marine Review the writer will spin more yarns about his whaling experiences in the old steam whaler. It may be that some of the old-timers will remember many of the incidents mentioned and perhaps they, too, will have some good yarns to swap.

CRESCENT CITY, CALIFORNIA

A Harbor of Great Commercial, Strategic, and Safety Values Needing Federal Action

IN the northwest corner of California and in southern Oregon there is a long stretch of very forbidding coastline, backed by a hinterland very rich in natural resources. About twenty miles south of the northern line of California the shore takes a sudden dip to eastward and forms a natural pocket, which has long been considered by shipping men as a very good position for a harbor. Here Crescent City, the county seat of Del Norte county, is located, and here, as far back as 1852, there existed a busy seaport serving the territory lying between Yreka on the south and Roseburg, Oregon, on the north. In these early times practically all of the freight for southern Oregon was discharged at this point, from vessels on the run between San Francisco and Portland, onto lighters, which were towed ashore and beached by hand. The early business of this port was due to a low pass through the mountains just back of Crescent City con-



The wharf at Crescent City.

necting the coast with interior valleys. And this business continued up to the time of completion of the railroad between San Francisco and Portland.

Crescent Bay, being located almost exactly midway between the Mexican and the Canadian boundaries of the United States, and also midway between San Francisco

Bay and the mouth of the Columbia River, has attracted the attention of the Federal Government as a wonderful location for a harbor of refuge and also as a possible site for a naval base. On account of this interest, an act was passed enabling a Federal appropriation of \$390,000, to which \$100,000 was to be added by local interests, the whole project being provisional on the completion of a railroad between Grants Pass, Oregon, and Crescent City. A part of this appropriation was made available, Del Norte county bonded itself to the limit, and the work on a breakwater to protect Crescent Bay was begun.

At the present time 2225 feet of breakwater have been built, \$245,000 have been spent, 50 per cent of which amount was raised by Del Norte county. This breakwater, at its present length, gives protection from the prevailing northwesterers, but does not protect from southerly storms. Crescent City has built a good wharf to deep water, and steamers may now lie alongside and discharge their cargo or passengers onto this wharf. Crescent City and Del Norte county, backed by Northern California and Southern Oregon, are asking that the Federal authorities complete the harbor at Crescent Bay.

It will seem strange to many of our readers that a county describ-



NO BREAKWATER!

Our two views illustrate very graphically what happens in the open roadsteads on the Pacific Coast when a Southeaster catches a vessel at the wharf. In the upper picture the bark Gardiner City is shown fighting rough water at an open beach port on the California coast. The lower picture shows the condition of the wharf and the vessel next morning. It is to offset just such conditions that Crescent City and Del Norte County are asking for the completion of the breakwater in Crescent Bay.



ed as having an important harbor and a very rich hinterland should have bonded itself to the limit with the comparatively low expenditure of \$125,000 on a very important harbor work. In order to explain this apparent anomaly, it is necessary to consider the relation of the Federal Government to this rich hinterland. On investigation, we find that Del Norte county has 71 per cent of its area reserved in untaxable national forest. The adjacent counties forming this hinterland are all similarly handicapped. Josephine county, Oregon, is 68 per cent national forest; Curry county, Oregon, is 67 per cent national forest and is now bonded to the limit for highways; Trinity county, California, is 84 per cent national forest; and Siskiyou county, California, is almost in a similar predicament.

Federal Forest Reserves, as now constituted, are untaxable so far as county needs are concerned; and yet it is up to the county to maintain schools and highways through these areas, the only revenue of the county being a return of a certain proportion of the stumpage when timber is sold out of these areas. Since



Aerial view of Crescent City harbor showing wharf and breakwater.

the policy of the Federal Government is not to sell timber except under restrictions which make lumbering quite an expensive operation, it will be easily understood that this stumpage revenue is comparatively low. Hence the backwardness of these counties when it comes to providing money for public improvements.

Under this condition it would seem only a matter of equity that in such locations the Federal Government should assume a much larger share of expenditure for semi-Federal public improvements than is the rule in the more densely settled and more highly improved sections. A harbor of refuge for naval and merchant vessels of American and other merchant marines is more than semi-Federal improvement, the cost of which might well be assumed even in toto by the Federal Government as an item in the expense of protection for seagoing vessels.

There are many natural advantages accruing to a well improved harbor at Crescent Bay, which point to



Chart showing finished breakwater and proposed extension at Crescent Bay, California.

that location as the logical one for the establishment of a harbor of refuge of both naval and merchant vessels. One of the most important of these is that there is no river emptying into this bay and therefore there can never be any bar at the entrance. This point should certainly appeal to our legislators when they consider the immense sums that have been spent in the past by the Federal Government in keeping channels at various depths for various ports where bars exist.

Another very important item is the excellent anchorage ground and the fact that the breakwater is on a rock foundation and cannot sink, as is so often the case when these structure are built on sandy bottoms.

Considering the hinterland to this harbor, we find that there is timber sufficient to furnish 200 billion feet of merchantable lumber to the markets of the world. Of this amount, at least 84 billion feet belong to the Federal Government, and it is an undeniable fact that only a small portion of this lumber can be removed to good commercial advantage otherwise than through a port at Crescent Bay. In the Rogue River Valley, Oregon, there are very important agricultural and horticultural interests with large annual crops, and these crops are now paying the highest freight rate of any territory in the United States on a through railroad. The establishment of a proper harbor at Crescent City and the opening of the modern highway which is now being constructed between Crescent City and the Rogue River Valley would reduce the cost of freight from Rogue River Valley points about 50 per cent.



A small section of the fishing fleet in Crescent Bay.

A harbor at Crescent City can be constructed at probably less expense than at any other point on the Coast between San Francisco and Columbia River. Excellent rock for the sea wall is blasted at a quarry one-half mile from the shore end of that wall and is run down into place by gravity railroad.

The total project, as indicated on the chart reproduced herewith, will give a strip of water over a mile long and with an average width of a quarter of a mile, 30 feet and over in depth; and at a depth of 18 feet and over in low tide, these figures would be increased to 3000 feet width and 15,000 feet length. The harbor entrances would be 40 feet deep at low tide and would always maintain this depth. The complete project thus outlined entails a total cost of about eight million dollars.

STEVEDORING OF AMERICAN CARGOES—II

By ROBERT H. OVERSTREET

ON page 405 of the September issue of *Pacific Marine Review* will be found the first installment of this article, in which Mr. Overstreet analyzes the problem of the handling of cargo on American vessels and shows how the cost of loading and discharging represents from 20 to 25 per cent of the direct operating disbursements. Figures are given showing the actual stevedoring cost of loading and discharging a typical Shipping Board vessel operating from the Gulf of Mexico to the Orient and to Atlantic Coast ports. The present installment has to do with claims, tally of cargo, and possible collusion between stevedores and shipping clerks in misrepresenting the amounts of cargo handled.

The United States Protective and Indemnity Agency, Inc., are agents for the United States Shipping Board, and handle and adjust protection and indemnity claims against Shipping Board vessels. These claims, insofar as cargo is concerned, cover loss or damage to or in

connection with cargo, except when caused by collision, fire, or other perils of the sea. The status of claims of this nature paid as at June 30, 1924, for cargo damage, pilferage, and shortage on all Shipping Board vessels, amounted to 0.125 per cent, or expressed decimally, 0.00125 of the revenue received. This is indeed a good record.

The importance of a proper check on the cargo that goes into and is taken from the vessel cannot be over-emphasized. The following two instances are cited to illustrate how easily claims can arise against a ship for short landed cargo if the tally is not most carefully attended to.

Short Tally?

Amongst the cargo landed on arrival of a vessel at Shanghai was a consignment of steel bars. The bill of lading and manifest in connection with this ship-

(Continued on Page 466)

MARINE OIL ENGINE AND MOTORSHIP PROGRESS

WORTHINGTON DOUBLE-ACTING TWO-CYCLE DIESEL ENGINE

SINCE 1900 the Worthington Pump and Machinery Corporation has been continuously engaged in the manufacture of internal combustion engines of various types and designs. The double-acting 2-cycle diesel engine is the product of this company's own engineering staff. This engine was developed to meet the increasing demands in the marine field for a heavy duty engine developing maximum horsepower with minimum weight.

Since every stroke of the 2-cycle double-acting engine is a power stroke, it follows therefore that such an engine will develop about three times the horsepower of a 4-cycle single-acting engine and about double the horsepower of a 2-cycle single-acting engine of the same cylinder dimensions.

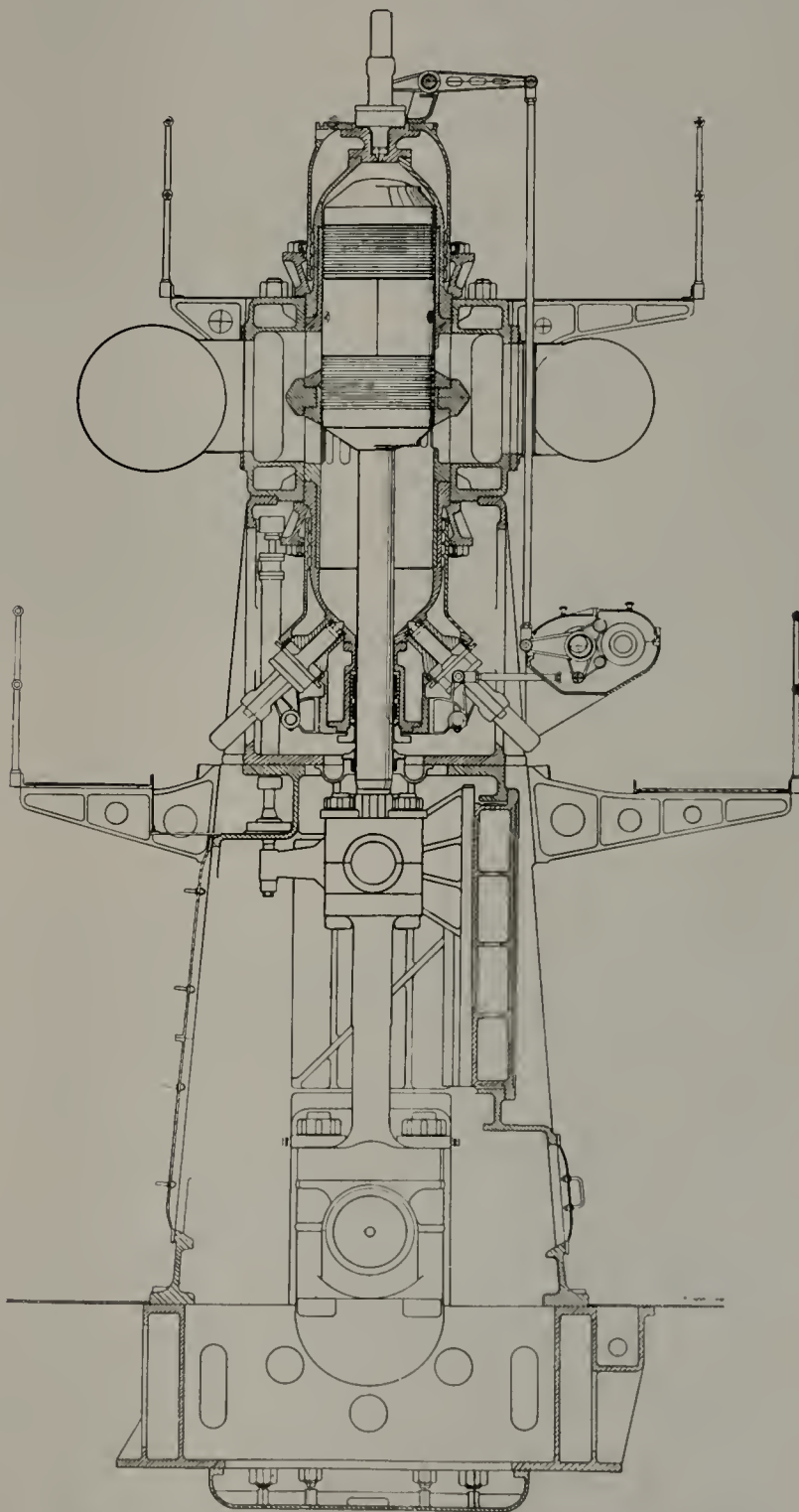
Steel Cylinders

Early designers had found this problem insuperable in the double-acting design. Worthington has solved the problem with a design which, without sacrifice of strength or rigidity, provides for the expansion of the unequally heated metal of the cylinder, at the same time keeping the temperature differences between the inner and the outer walls of the metal as small as possible. The cylinder is the single feature which has made the double-acting design possible.

This cylinder, constructed of forged steel, into which a cast iron liner is pressed, is secured at the lower end to the cylinder base and is free to expand or contract at the upper end with the varying temperatures which are encountered in combustion. The cold end of the cylinder, which is exposed to the hot gases for only a short period in each stroke, is fastened rigidly to the cylinder base and the upper portion of the cylinder from the clamping ring and upwards are entirely free to expand. This construction reduces the heat stresses in the cylinder to a minimum. Even the jacket necessary to cool the cylinder proper is bolted only at the top end of the cylinder and is free to slide in the stuffing-box arranged in the clamping ring.

Air Injection

For the fuel valve oil spraying, the necessary air is injected by the use of a direct-driven air compressor of the four-stage type, mounted on a box frame member at the end opposite the flywheel. From a scavenging compressor the scavenging air is supplied. This compressor, equipped with rotary slide



Cross-sectional elevation of the new 2-cycle, double-acting Worthington diesel engine. It will be noted that the design affords free expansion and contraction vertically of both the upper and lower cylinders. Note also the following of marine standards in crosshead guide and long connecting rod. It is expected that the forged steel cylinders used in these engines will set a new standard for satisfactory distribution of the heat of combustion in diesel engines.

valves, which regulate the aid to and from the pump, furnishes air at a very low pressure for scavenging the burnt gases from the power cylinder, leaving an ample charge of clean air for combustion on the next stroke.

All the main bearings, crank and wrist pin bearings, and gears are supplied with force feed lubrication. Lubrication to the power cylinders, as well as the air compressor and scavenging pump, is accomplished by mechanical force feed lubricators, driven from the engine.

A stiff box type base to the top of which the box frames are secured carries the crank shaft. Four tension rods from each cylinder, which tie the cylinder housings to the frames and base, carry all the power stresses to the cylinders.

From a vertical shaft between the gear on the main shaft and the driving gear on the cam shaft, the valve gear is driven, the valve motion for the fuel spray valve being common for the top and bottom. The same cams are used for ahead or astern operation in marine work. These cams are moved by gears through a range of about 34 degrees, which simplifies the valve gear to the greatest extent. The governor acting on the fuel pump inlet valve controls the fuel pump, thereby metering the quantity of oil which is pumped to each valve.

The following is a summarization of the principal features in the design of the Worthington 2-cycle double-acting diesel engine:



Above is shown the assembly of the chrome vanadium forged steel cylinder and the gray cast iron cylinder liner for the Worthington 2-cycle, double-acting engine. Below is shown the 4-cylinder unit of this engine. This unit is the engine which will be used on two of the conversion jobs of the United States Shipping Board. It develops 3000 shaft horsepower at 90 R. P. M.

Low weight per horsepower with minimum floor space requirements.

Forged steel cylinder, which is secured in a manner which permits free expansion.

Box frame construction with large openings for inspection and adjustment.

Through bolts for each cylinder, relieving the frame from tension stresses.

Steel main bearing shells machined all over, tinned, and babbitted.

Large crank and wrist pin boxes of forged steel, machined all over, tinned and babbitted.

Crosshead construction with crosshead running on a water cooled guide.

Air starting valve on each cylinder for low pressure air.

One lever for starting and stopping the engine.

Port scavenging and elimination thereby of inlet and exhaust valves.

Single lever control for air starting and fuel injection so that on starting no fuel can enter the fuel valve or the cylinder when starting air is admitted.

Variable by-pass metering type of fuel pump.

Force feed lubrication to all gears, bearings, and outboard bearings.

Indicator motion for each cylinder.

Low fuel oil and lubricating oil consumption.

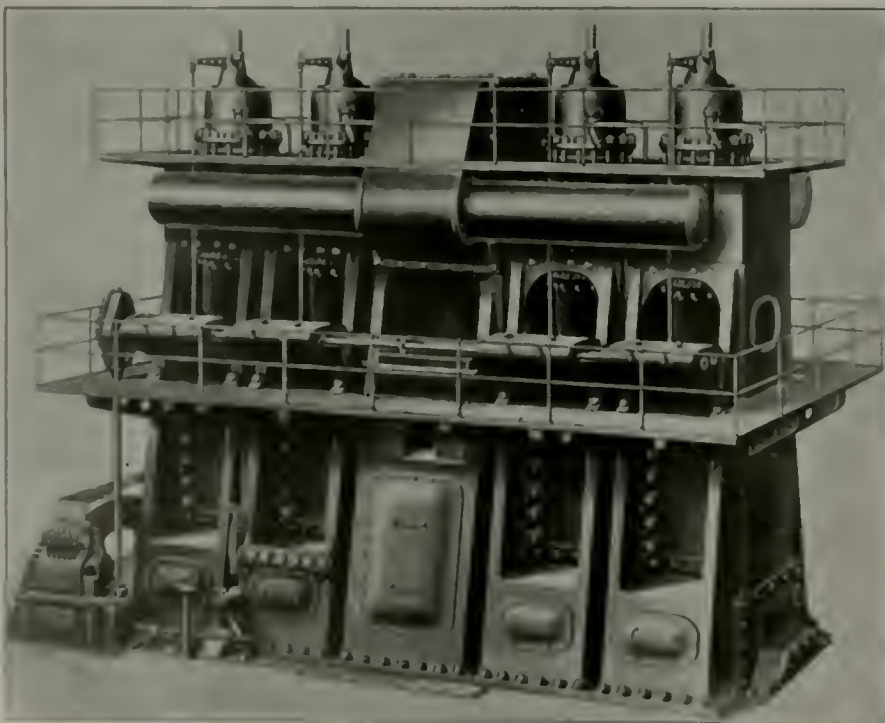
Double-acting principle, making every stroke a power stroke, results in much smoother running conditions.

High mechanical efficiency.

Heavy crank shaft of forged steel.

TOBIN BRONZE SHAFTS

Owners of workboats engaged in the fishing business out of San Diego are alive to the fact that the best material is the cheapest. Probably that is why the thrifty Portuguese operators there have insisted that their boats be fitted with Tobin bronze tail-shafts. A representative of Pacific Marine Review noticed several being machined at the Union Engine Company's shops, Oakland, recently, and was told that they were for diesel-operated vessels from San Diego. The warm salt water along the southern coast soon plays havoc with steel, so Tobin bronze is now being used and is found the cheapest in the long run.



SOME APPLICATIONS OF DIESEL-ELECTRIC MACHINERY TO SHIP PROPULSION

By B. S. HAVENS,
General Electric Company.

THE use of diesel-electric machinery for ship propulsion has grown rapidly in the last five years, and this rapid growth undoubtedly indicates an increasing appreciation by ship owners of the advantages of this type of drive.

In 1919 diesel-electric drive was installed on the motorship *Mariner*, a fishing trawler and the first commercial vessel to be equipped with this type of propulsion machinery. This boat, owned by the Massachusetts Trawling Company, was put in service in 1920 and demonstrated superiority over direct drive. The propulsion machinery consisted of two 4-cycle, 240-brake horsepower, Nelseco diesel engines, each direct connected to a 165-kilowatt, 125-volt, direct current generator. These generators supplied current to a 400-horsepower, 200-revolutions per minute, direct current propulsion motor. Rheostatic control was used, operated from either the pilot house or the engine room.

Two years later there was put in service the first ocean-going merchant ship in this country equipped with the diesel-electric method of propulsion. This was the motorship *Fordonian*, a cargo vessel of 4050 tons displacement, owned by the American Mediterranean Steamship Company and engaged in coastwise traffic between New York and Havana. This boat was converted from straight diesel engine drive to electric operation by the Todd Shipyard



Diesel-electric ferryboat *Golden Gate*.

Corporation, the General Electric Company supplying the electrical equipment. The drive in this case consisted of two 350-kilowatt electric generators, each driven by an Ansaldo S. Georgio diesel engine of 500 brake horsepower. The generators supplied power to a double armature, 850-horsepower, 120-revolutions per minute, 500-volt, direct-current propulsion motor. Control was used of the combined voltage and rheostatic type, operated from the engine room only.

During the past few years the *Fordonian* has been operating on the Great Lakes.

Diesel-electric drive, by this time, was beginning to receive recognition and, in the same year, there was put in regular service the first electrically propelled ferryboat in the United States, the *Golden Gate*, operated by the *Golden Gate Ferry Company* in San Francisco Bay be-

tween San Francisco and Sausalito. Much interest was aroused in this venture at the time and the *Golden Gate* was soon followed by a second, the *Golden West*, which was launched the following year. These boats were propelled by two 4-cycle Pacific-Werkspoor diesel engines of 500 brake horsepower, each direct connected to a 360-kilowatt, 250-volt, direct-current generator, which, in turn, supplied power to two 750-horsepower, 145/180 revolutions per minute, direct-current propulsion motors at opposite ends of the boats.

The *Golden Gate* represented a departure in ferryboat propulsion, being the first double-ended boat of its kind where each propeller was driven separately. It is admitted that the most economical method of propelling a double-end, double-screw ferryboat was to concentrate the majority of power on the stern propeller, and this was most satisfactorily accomplished by the use of electric drive.

So satisfactory did these two boats prove that the *Golden Gate Ferry Company* in 1923 ordered complete electric propulsion and control equipment from the General Electric Company for another new, steel hull, double-ended ferryboat to be operated in the same manner and on the same service. The last boat, however, has not yet been put in service.

Other applications for diesel-electric drive developed in April, 1923, when the *Standard Oil Company* (Calif.) put into service the oil tanker *Standard Service*, following it in the same year by the *Alaska Standard*, two excellent examples of this application to ocean-going vessels. Both boats were equipped with propulsion machinery of the same type and rating, consisting of two 4-cycle, 400-brake horsepower Pacific-Werkspoor diesel engines, each direct connected to a 245-kilowatt, 230-volt generator for supplying power to a 600-horsepower, 460-volt, 130-revolutions per minute, double armature direct-current propulsion motor. Ward-Leonard control was used here also. The successful operation of these two vessels influenced the *Standard Oil Company* (Calif.), in



Diesel-electric tanker *Hawaiian Standard*.

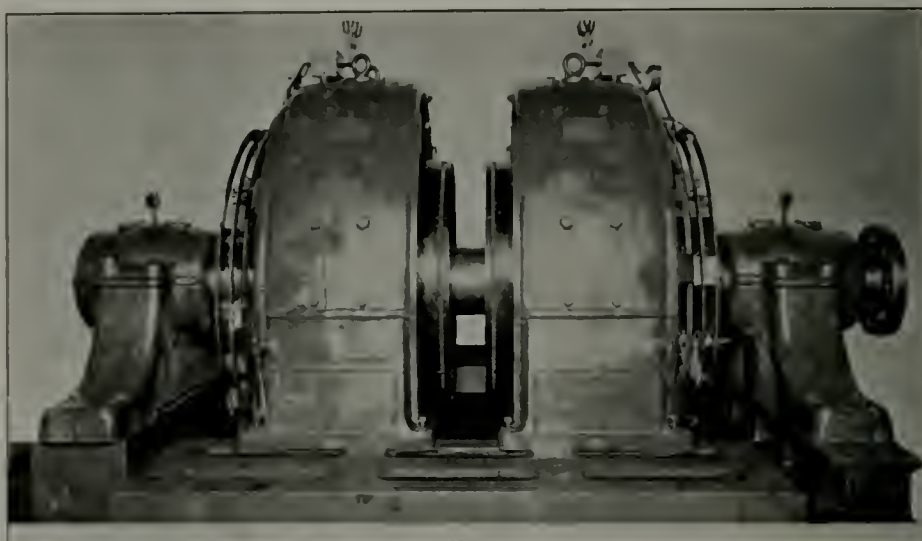


Diesel-electric tug Van Dyke 3.

1924, to build a third, the Hawaiian Standard, similarly equipped, for operation to the Hawaiian Islands.

Later, in 1923, the motorship Twin Ports was put in operation. This boat was the first of two built by the Minnesota Atlantic Transit Company for summer operation between Duluth and New York via the New York State barge canal, and for winter coastwise operation between New York and the West Indies. The sister ship, the Twin Cities, was put in service shortly afterwards.

The Twin Ports was driven by twin propellers operated by 250-horsepower, direct-current motors taking current from two 250-kilowatt generators. These were, in turn, operated by two Lombard diesel engines, the power being sufficient to drive the ship at a maximum speed of 13 miles per hour. Complete electric auxiliaries, including steering



Propulsion motor of the General Electric double-armature direct-current type as installed in the motorship Fordonian.

gear, ventilation, capstans, winches, refrigeration, and heating were also

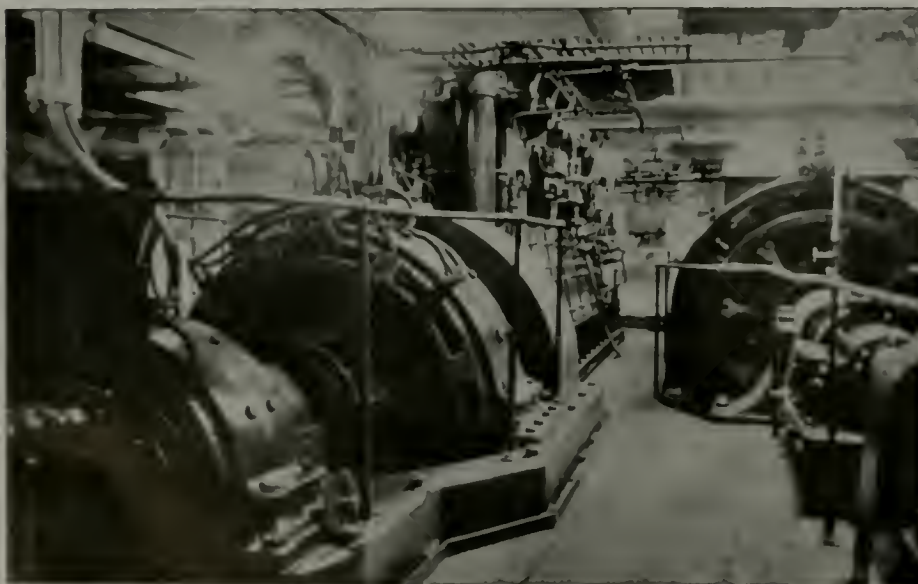
er. One controller handle for each motor in the pilot house controlled the contactor circuits on the control board located in the motor room.

In the latter part of 1923 the Atlantic Refining Company, following a study of all types of marine drive, decided to build three tugboats to be propelled by diesel-electric machinery. Work was immediately started, and the first tug, the Van Dyke I, was launched June 7, 1924, soon to be followed by the Van Dyke II and the Van Dyke III.

The power plant consisted of two 3-cylinder, 225 brake horsepower Price-Rathbun airless injection diesel engines of Ingersoll-Rand manufacture, driving two 155-kilowatt, 257 revolutions per minute, 125-volt

operated from the main power units. When the latter were shut down in port an auxiliary 40-kilowatt generator furnished the necessary power for main generators. The two generators were connected in series and drove a single propelling motor of 370 horsepower, 120 revolutions per minute. Two auxiliary generators, each having a capacity of 26 kilowatts, were direct connected to the main engine generators. One of these furnished excitation for the propelling equipment and the other was used for driving auxiliaries.

The auxiliary equipment consisted of the following: Electric-hydraulic steering gear; lighting equipment; two rotary circulating and bilge pumps, each capable of handling the circulating water for two engines and so connected that either pump could be used for either purpose; a pump for transferring oil from the main fuel tank to the engine room day tanks; a motor-driven air compressor to furnish air for



Engine room of the diesel-electric tanker Stan and Service, showing one of the 4-cycle Pacific-Werkzeug diesel engine of 400 shaft horsepower direct-connected to a General Electric 245-kilowatt generator, and, at the left, the 600 horsepower General Electric double armature direct current propulsion motor.

starting the engine, and a Cameron two-stage centrifugal fire pump capable of furnishing three or four powerful streams of water.

The Atlantic Refining Company placed an order the same year with the General Electric Company covering electric propelling equipment for converting an 8000-barrel tanker, the motorship *Anahuac*, to diesel-electric drive, making the fourth equipment in the company's service to be propelled in this manner. This vessel is now known as the motorship *Brilliant* and is used as a bulk gasoline carrier for coastwise service.

Two 225-horsepower Ingersoll-Rand diesel engines were installed, each driving one 160-kilowatt main generator and a 26-kilowatt auxiliary generator. The two main generators were connected in series and furnished power for driving a single 400 brake horsepower propelling motor, the vessel being of the single screw type. Control was of the Ward-Leonard of voltage type, being arranged for operation from the pilot house only. The craft was so designed that, when in port, one of the main engine generators would be ing the cargo pumps while loading used for furnishing power for driving the cargo pumps while loading and unloading.

In 1924, also, diesel-electric drive was ordered for a self-propelled Great Lakes hopper dredge, the *Lake Wier*. The Construction Materials Company was responsible for this change-over, it being the intention to use the boat for dredging and also for transporting and delivering construction materials for building purposes.

Propulsion equipment, in this instance, consists of two 600 brake horsepower diesel engines built by the Worthington Pump & Machinery Corporation, each direct connected to a 400-kilowatt main generator and a 50-kilowatt auxiliary generator. Under normal operating conditions each main generator will drive a 500-horsepower motor direct connected to a propeller, the craft being of the twin-screw type. Ward-Leonard control is used, providing independent control of each propelling motor and arranged for operation from either the pilot house or engine room. Provision is also made for operating both propelling motors from one generator. One auxiliary generator will furnish excitation for the motors and generators and the other is provided for furnishing power to drive engine room auxiliary motors, steering gear, and lighting. All auxiliaries, of course, will be electrically driven.

There will also be installed in this boat two 400-horsepower, motor-driven dredging pumps, the power for these being taken from either or both of the main generators. The arrangement is such that, under one condition of operation, both dredging pumps will be driven from one generator, the other generator furnishing power for propulsion. Under another condition of operation, when no propulsion is required, each dredging pump will be connected to a main generator and will operate independently.

It is expected that this dredge will be put in operation in September of this year.

Perhaps the most recent case of interest of the installation of diesel-electric drive for marine propulsion is that of the conversion of the *W. S. McChesney, Jr.*, a sidewheel ferryboat owned by the Falls Cities Ferry & Transportation Company of Jeffersonville, Indiana, into a diesel-electrically operated craft, renamed the *Froman M. Coots*. This vessel was put back in service on the Ohio River, with its new equipment, in May of this year.

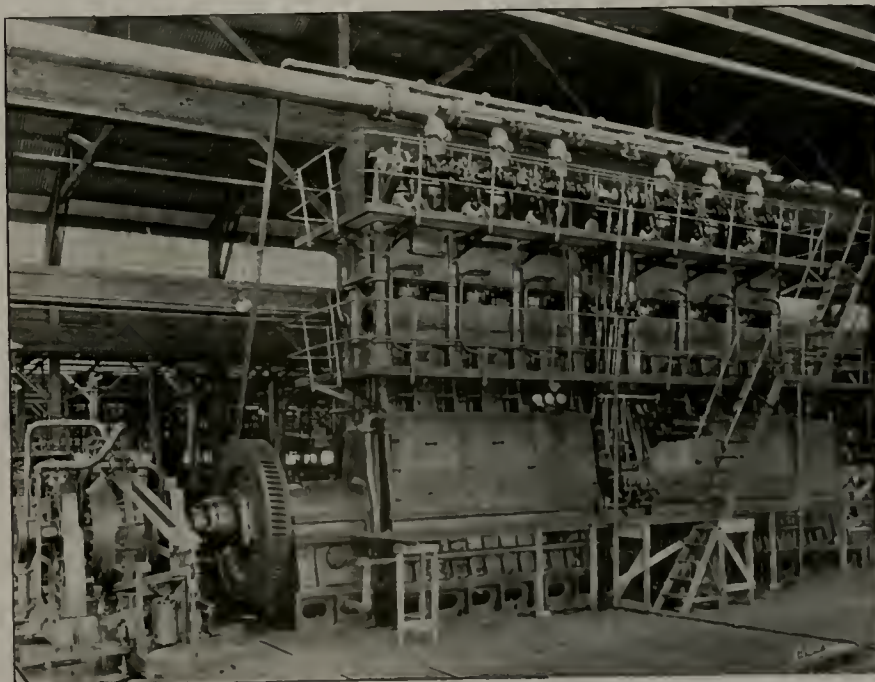
The *W. S. McChesney, Jr.*, had been in passenger and freight service between Louisville, Kentucky, and Jeffersonville, Indiana, since 1912, using reciprocating engines for motive power. This was the first application of electric propulsion to a ferryboat of this type in America. When converted the power plant consisted of two Fairbanks-Morse diesel engines, direct connected to two 175-kilowatt, 230-volt, direct-current generators. Power from the

latter was used for driving two 180-horsepower motors, running at 425 revolutions per minute at full speed. Through a system of double reduction gears, the motors were connected to the two paddlewheels, turning at 14 revolutions per minute. The main generators were also arranged to supply power for the illumination of the boat and for running the boat's auxiliaries.

It is significant to note that the United States government has ordered the electrification of another United States Army towboat, *Hull No. 75*, to be equipped with this type of propulsion machinery. This boat will utilize two 90-kilowatt generators as a power plant to supply electrical energy for driving a 225-horsepower, 25 revolutions per minute stern wheel.

Also under construction at the present time are the motorship *Burnett* and the motorship *Gillette*, both United States Army towboats of somewhat smaller power requirements. These will use one 85-kilowatt generator each for 100-horsepower stern drive. This should prove an important factor in the stimulation of progress in inland waterway service, a field in which there is much room for development.

And thus, in 1925, diesel-electric propulsion is found to be occupying an important position in the marine field. By reason of its flexibility—allowing the application of the developed power to uses other than driving the ship—there is no question but that the future will see a rapidly widening field for this type of propulsion machinery.



1000 brake horsepower Pacific-Werkspoor diesel engine.
455

THE WHALEY CONSTANT PRESSURE OIL ENGINE

THE Sun Shipbuilding & Dry Dock Company of Chester, Pennsylvania, has completed the building of the new Whaley engine, which was invented by William B. Smith Whaley and designed by Charles A. Muller of the Whaley Engine Patents, Inc. This engine was privately shown to stockholders and interested engineers, at which time it was operating on air only for the shop tests.

Ninth of a series built during the past several years for the purpose of perfecting a new power cycle, this Whaley engine is described as a single-acting, 4-cylinder, 2-cycle machine designed to develop 750 horsepower. It is a vertical reversing engine, conventional in design, though following the best steam-engine practice. It is distinguished from all other heavy-oil engines in this country and abroad by the fact that the cylinder clearance, at the time of the fuel injection, is opened by a piston valve to communication with a static receiver having many times the capacity of the cylinder clearance. This presents a condition exactly the opposite to that in all present internal-combustion engines, where the basis of operation is on a trapped charge. In the Whaley engine, the piston valve to the static receiver is open as long as the fuel is being injected.

The Whaley engine has the usual form of port scavenging, supplemented by high-pressure scavenging and supercharging through the top of the cylinders. The last two operations are carried out with air at a pressure of about 45 pounds per square inch. The air pumps for the super-scavenging and supercharging operation are contained in the lower part of the power cylinders. There is a supplemental scavenging air pump formed in the upper part of the frame in which operates a piston placed on top of the crosshead. Two cylinders are cast in block with a valve chest between. The air from the pumps just described is used either in direct line or is transferred through the ports in the valve chest to the opposite cylinder.

Control of the Air

The air is controlled by piston valves, one working inside the other and both being actuated by links similar to those used on locomotives and reversing marine steam engines. By linking-up, the opening of the piston valves is made to synchronize to the period of fuel injection in such a way that, for practical purposes, combustion takes place during the entire time that the valve is open. The practical effect in the operation of the engine will be that fuel will be supplied to the point of cut-off of the piston valve, which will be open for the power necessity of the engine. The result-diagram will, therefore, be that of the steam engine so far as the admission and point of cut-off are concerned. The main purpose of the clearance reservoir is to maintain the maximum working pressure desired, which, in the case of the present engine, is 350 pounds per square inch. As this is the normal compression pressure of each working cylinder, it is also the normal pressure for the receiver or reservoir.

Under normal running conditions, no variation in pressure is expected no matter what the conditions of loading and fuel injection may be. In floating the receiver on the compression space, there will be but little transfer of air, heat, or pressure through the valves.

The receiver serves as an absorber in case of any rise in pressure in the cylinder through any cause whatever. By an ingenious arrangement of the valves, the compression space port is made to serve successively for the introduction of the super-scavenging and supercharging and to establish communication with the reservoir or receiver during the combustion period.

Novel Fuel Pumps and Valves

A novel arrangement of fuel pumps and fuel admission valves is used. The fuel pump is placed on top of the valve chest and is driven directly from the valve stem. The pumps deliver the charge of oil for each stroke directly into each individual fuel valve, there being no piping whatever employed. The pressures will be between 4000 and 8000 pounds per square inch. The action of the pumps synchronizes with the action of the valves, both being operated from the same valve stem, thereby assuring the maintenance of relation between fuel injection and duration of the valve opening to cut-off. Because of this construction, there practically will be no rise in pressure in the cylinders or in the system beyond that due to compression.

Fundamental Action

The fundamental action of the Whaley engine is entirely different from that of any of the present oil or diesel engines. Other present-day engines operate with a trapped charge of air which is confined in closed compression space into which the fuel is injected, and there is always a rise in pressure after combustion takes place. In the Whaley engine, even early timing of the fuel admission will cause no appreciable pressure rise above the capacity of the pressure valves into the receiver.

Maintaining the maximum pressure to a definite figure allows the carrying out of a program for the design of relatively light weight oil engines. It is expected that the Whaley engine will weigh less than 100 pounds per horsepower, a figure which represents a substantial improvement over current practice. Also, due to the maximum pressure principle, the Whaley engines, for all sizes of power, can be built at approximately the same weight per horsepower as is the case with the steam engines. This means that the weight of less than 100 pounds per horsepower will apply to Whaley engines of all sizes. This feature will make the development of the Whaley engine much more valuable as an economic factor, the larger the units are built; especially so as with the present diesel and heavy oil engines weights increase progressively as the power to be delivered increases.

Present Status

The Whaley engine at the Sun Shipbuilding & Dry Dock Company's plant is now undergoing its shop tests and it is expected that the trials will be completed in time to present all technical details of the engine and the results of performance before the winter meetings of the national engineering societies.

Those who have inspected the engine have stated that it closely resembles a vertical steam engine of sturdy design, but having four high pressure cylinders. They have remarked the absence of cams, rollers, and gearing associated with internal combustion engines.

(Continued on Page 466)

DIESELS ON THE PACIFIC

Fairbanks-Morse Installed Successful Plants in Many Types of Busy Craft

DIESEL engine drives for vessels in all classes of service are showing such marked reductions in operating costs as compared with steam driven vessels that the growth in this field is little short of amazing. Fishing boats, tugs, workboats of all types, shallow draft boats with tunnel propellers or paddle wheel drive, ferryboats, and pleasure boats are some of the main applications which are showing great activity. The tonnage of sea-going diesel-driven cargo carrying vessels is also continuing its rapid growth.

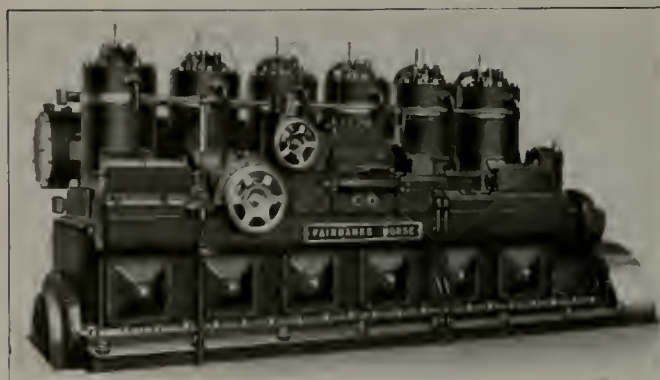
Of the many advantages of diesel engines, the one most appreciated by the owner of a boat is the reduction in fuel costs. That this reduction is a very substantial one is shown by the operating results of the motor tug Mahoe, which was described in the August issue of Pacific Marine Review.

The Mahoe is 120 feet long and is powered with twin 360 horsepower Fairbanks-Morse diesel engines. On the run from Seattle to Honolulu the Mahoe consumed 9000 gallons of fuel oil costing 5 cents per gallon, making a total of \$450 for the voyage of 14½ days.

A week later the steam tug Maoi, owned by the Matson Navigation Company, left Seattle for Honolulu. The Maoi is 150 feet long, 27 feet 6 inches beam, and draws 14 feet 1 inch forward and 15 feet 9 inches aft. Her steam engine is rated at 800 horsepower with 180 pounds boiler pressure.

The Maoi, burning fuel oil costing 4 cents a gallon under boilers, consumed 42,000 gallons at a cost of \$1680, as compared with a fuel expense of \$450 for the Mahoe. This saving for the diesel driven ship was in reality even greater than indicated, for the Mahoe was towing a square type wooden scow, bad weather was encountered, and the running time was 14½ days. The Maoi, towing a schooner which had been converted into a barge, and with better weather, required 13 days for the trip.

This reduction in fuel costs as shown by the Mahoe is typical of diesel driven boats. Another saving

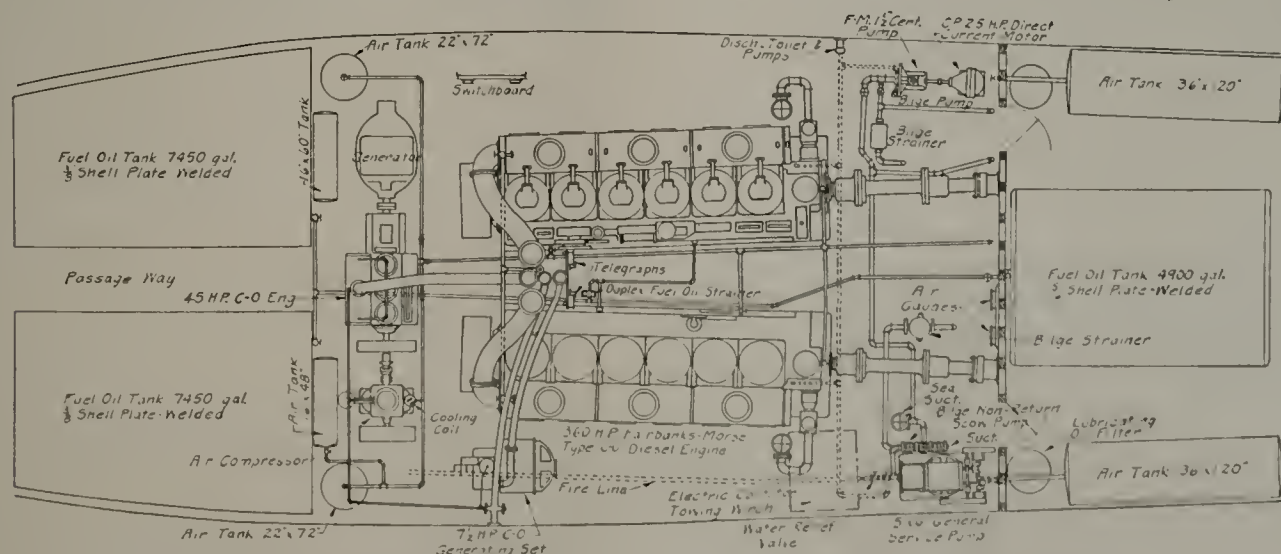


Six-cylinder, 360-horsepower Fairbanks-Morse full diesel engine. Two of these were used in the diesel tug Mahoe.

which is also important in tugs, fishing boats, ferryboats, and similar craft is the elimination of standby losses. The diesel engine may be started at a moment's notice and hence can be shut down while at the wharf between trips. In the case of the steam vessel, the boiler pressure must be maintained, and this standby loss may be 25 to 50 per cent of that required in operation. Moreover, the diesel engine is just as efficient in small units as in large engines. For that reason the boat requiring a 50 horsepower engine may be operated with the same efficiency as one requiring several thousand horsepower. The small steam engine is very inefficient as compared with large triple and quadruple expansion units.

It is not alone in fuel costs that the diesel engine shows a saving. The reduction in labor expense is also important. In the case of the Mahoe, two engineers and two oilers on twelve-hour watches handled the engine room. The steam engine equipped Maoi required a chief and two assistant with oilers and firemen.

It is comparatively easy to arrange for pilot house control for diesel engines so that the pilot controls the starting, stopping, reversing, and speed changes direct without signals. On many ferries, towboats, fishing boats, and similar services, the pilot is really



Plan showing the arrangement of machinery and piping in the engine room of the diesel tug Mahoe.

the controlling head and the man in the engine room is a good mechanic who has picked up the essential facts about keeping diesel engines in good condition.

The reason why one man and an oiler can operate a boat the size of the Mahoe may readily be understood by referring to the engine room layout shown in the illustration. The only auxiliaries are a 45 horsepower oil engine direct connected to a 30 kilowatt generator on one end and clutch connected to a 2-stage air compressor on the other end. Then there is a 7½ horsepower oil engine direct connected to a 4½ kilowatt generator for supplying light and for charging the storage battery while at the dock. Bilge and fire pump, towing winches, and other auxiliaries are motor driven.

As a matter of fact, the term oiler as applied to the engineer's helper is a misnomer. The lubrication of a modern diesel engine is entirely automatic. On the engines in the Mahoe there is not a single oil hole, oil cup, or grease cup. The mechanical lubricator does the work and all the oiler does is to clean the filter occasionally and check the oil level in the system.

The dependability of the modern diesel engine is so well established that the question whether this type of drive is as reliable as steam has long since ceased to be a point for argument. The wide spread records of diesel equipped vessels for long trips, where the engines have operated for weeks at a time without shut down, have proved conclusively that this type of prime mover will stand up equally as well or better than steam equipment.

It is interesting to note in this connection that although the engines of the Mahoe had been tested with only ten hours of dock running and nine hours of trial runs, the vessel put out for Honolulu, and both engines ran without a stop for the 14½ days' trip.

On account of the reduction in the number of auxiliaries, the maintenance cost for a diesel engine installation is actually less than for steam drive. One source of maintenance cost in steam vessels is the boilers, since it is necessary to clean these periodically, tubes must be replaced, and the time lost for this repair work on the boilers will often go a long



Harbor motor boat Kinsen Maru of Yokohama.



Motor trawler Patricia II.

way toward paying for the diesel engines. In the case of river and harbor service acid water is sometimes encountered which rapidly destroys the boiler tubes and makes the replacement cost very high.

Modern manufacturing methods of producing crankshafts and cylinders have practically eliminated any troubles due to these parts. The simplicity of the 2-cycle airless injection diesel engine is such that there is very little which can go wrong, and with any ordinary care in operation the repairs are negligible, the engines are extremely reliable, and with a long life, so that depreciation charges are low.

Reduction in the space required for fuel and machinery and an increase in the cruising range are also points of superiority in the diesel engine driven vessel. With the boilers and auxiliaries, the machinery in a steam vessel requires two and one-half times the space of the diesel engine installation. The oil fuel for the diesel engine requires about one-fourth the space required where oil is fired under boilers, and the space saving is even greater as compared with coal. In the case of vessels converted from oil fired steam plant, it is possible to increase the cruising range four times by using the same storage tanks.

On account of the fact that the bulk and weight of oil fuel are less than coal, the draft of a diesel engine driven vessel is considerably less than for a steam driven vessel. Another reason why the draft is less is because the boilers of a steam driven vessel contain several tons of water. In the case where vessels are converted from steam drive to diesel engine drive, it is frequently found that the draft is from six to twelve inches less than it was before. As a result of the saving in space and the reduction in draft, the cargo carrying capacity of the diesel equipped boat is considerably greater than for the steam driven vessel of equivalent size and cruising range.

In addition to these points, the cleanliness of the diesel engine is an advantage. Freedom from coal dust, ashes, and smoke is particularly important in ferryboats, pleasure boats, and other types of passenger vessels.

Considering all of these important advantages it is easy to understand the popularity of diesel engine drive for boats of all classes. In addition to the Mahoe, which is a fine example of a diesel engine driven seagoing tug, many other installations of Fairbanks-Morse engines have been made on the Pacific Coast during the past year. While it is not possible,

for lack of space, to mention more than two or three, these are typical of various classes of service.

The Toyo Fisheries, Wilmington, California, have just completed the Patricia II, which is equipped with a 240 horsepower Fairbanks-Morse direct reversible, 2-cycle, airless injection diesel. This engine is similar to the two 360 horsepower units in the Mahoe, except that it is a four cylinder engine instead of a six. The engine speed is 250 r.p.m. and a three blade Lambie, 68-inch diameter, 58-inch pitch propeller is used.

The Patricia II was built as a result of the successful experience with the Patricia I, which is equipped with a 100 horsepower Fairbanks-Morse engine. This vessel has a capacity for 50 submerged bait tanks. These submerged tanks give them a large bait carrying capacity, enabling them to remain on fishing grounds much longer than the other boats. All tuna are caught with a hook, line, and live bait, so the amount of live bait carried is very vital.

The success of their scheme is shown by the fact that the Patricia I caught 607 tons of tuna in the first eight months, for which an average price of \$110 per ton was received.

The Patricia II, just completed, has capacity in hold to carry 130 tons of iced tuna, and the submerged bait tanks will hold double the live bait of the Patricia I.

The hull is 108 feet long, 21 feet beam, and 7 feet draft. The engine room is 20 feet long and is located just forward of midships. The submerged bait tanks are located just off of engine room, and the cargo hold extends from bait tanks to fantail. A smaller cargo hold is also forward of the water-tight bulkhead ahead of engine room. The fuel tanks hold 8000 gallons and are abreast of engine, with two smaller tanks in extreme end of fantail. The crew's quarters and the galley are on the main deck above the engine room and bait tanks, with pilot house on bridge deck above. An additional bait tank is located on the after-deck, and for pumping sea water to this tank, a 4-inch, brass-fitted, Fairbanks-Morse Fig. 505 belted pump is used.

For lighting, a 1½ kilowatt, 32-volt, Fairbanks-Morse type "C. P." generator is used in connection with a 32-volt Westinghouse storage battery. A brass Trahern rotary bilge pump is in the engine room for handling bilge lines. A 2-ton brine refrigerating machine is installed in one corner of the galley, with brine tank on after-deck. It is not the intention to eliminate the packing of fish in ice but only to hold the ice and pre-cool the fish before packing that the ice machine is used. All the controls of the main engine are extended to the pilot house, so all maneuvering is done from that point.

Ocean-going twin screw motor tug Mahoe, built at Seattle for Young Brothers of Honolulu and equipped with two 6-cylinder, directly reversible, 4-cycle, solid injection, 360-horsepower Fairbanks-Morse diesel engines. Read the record of the Mahoe's maiden trip as contained on the first page of this article.

Ahead of the main engine and in line with same is a 7½ horsepower Fairbanks-Morse engine mounted on sub-base and direct connected to an air compressor. The coupling forms a pulley for operating a line shaft running parallel with the engines. From this line shaft is operated the 4-inch centrifugal bait pump, 1-inch centrifugal brine pump, ammonia compressor, rotary bilge pump, generator, and winch. Friction clutch pulleys on the line shaft permit machines not needed to be disconnected. A drive is also arranged from the main engine, so the 7½ horsepower engine is not needed while at sea.

On the trial trip of the vessel, with all fuel tanks filled but with no cargo, a speed of 9 knots was attained at normal speed of engine. A notable feature was the entire absence of color in exhaust, the engine performing at all speeds with an absolutely clear stack.

One of the fields which has shown considerable activity is the use of diesel engines for driving automobile ferryboats. There are now more than a score of such vessels plying on Puget sound, while British Columbia has as many more.

One of the latest additions to the automobile ferry fleet is the Wollochet recently completed by the Skansie yards at Gig Harbor, Washington. This boat is 100 feet long and is driven by a 150 horsepower Fairbanks-Morse engine. She is operated on a daily schedule from Tacoma to Wollochet Bay.

Marine men in Japan and China have also realized the advantages of diesel engine drive and many installations have been made in those countries.

The harbor master at Yokohama has an oil engine equipped boat called the Kinsen Maru. This boat, dimensions of which are 60 by 13½ by 7 feet, is powered with a 100 horsepower Fairbanks-Morse engine and equipped with a 43-inch diameter by 48-inch pitch, three-blade Coolidge propeller, and at 360 r.p.m. a speed of 11.06 miles per hour is developed. In his official duties the harbor master boards all of the vessels entering the harbor of Yokohama and the Kinsen Maru is in constant service from daybreak to dusk, averaging about fifteen hours daily for seven days a week, and in the several months that the boat has been in service the engine has performed without the slightest difficulty.

Another 100 horsepower installation of interest is the tug Charlie Helm No. 1, which is working for fourteen hours a day, seven days a week, on the Yokohama-Tokyo run. This boat is doing the work done formerly by three steam boats and is kept so busily engaged that although the installation was made several months ago, it has been impossible to find the boat idle long enough to get a good picture.



LARGEST DIESEL-ELECTRIC CONVERSION JOB

THE largest installation of diesel-electric drive in a conversion job is now successfully operating in the tanker J. W. Van Dyke of the Atlantic Refining Company. This vessel, formerly the steam tanker Allentown, was purchased by the Atlantic Refining Company from the United States Shipping Board and turned over to the Staten Island Shipbuilding Company, Staten Island, New York, for conversion to diesel-electric drive. It is notable in this connection that this firm has built and delivered satisfactorily to the owners of the J. W. Van Dyke a number of diesel-electric tugs.

The principal characteristics of the tanker J. W. Van Dyke are: length over-all, 380 feet; molded beam, 53 feet 9 inches; molded depth, 31 feet 3 inches; capacity, 60,000 barrels; speed 11 knots. She is built on the Isherwood system of longitudinal framing and has 11 cargo tanks with 8 summer tanks. The pump room is amidships and the propelling machinery aft. Her original propulsion machinery was a steam turbine of 2100 shaft horsepower, driving a single screw through double reduction gear with steam supplied by three water-tube boilers.

Preparatory to installation of the diesel-electric machinery, the screen bulkhead between the boiler and engine rooms was cut out, giving a single compartment for the diesel-electric installation. Part of the fuel oil storage was also removed, giving additional tank capacity of 5400 barrels.



Atlantic Refining Company's diesel-electric tanker J. W. Van Dyke.

Propulsion Machinery

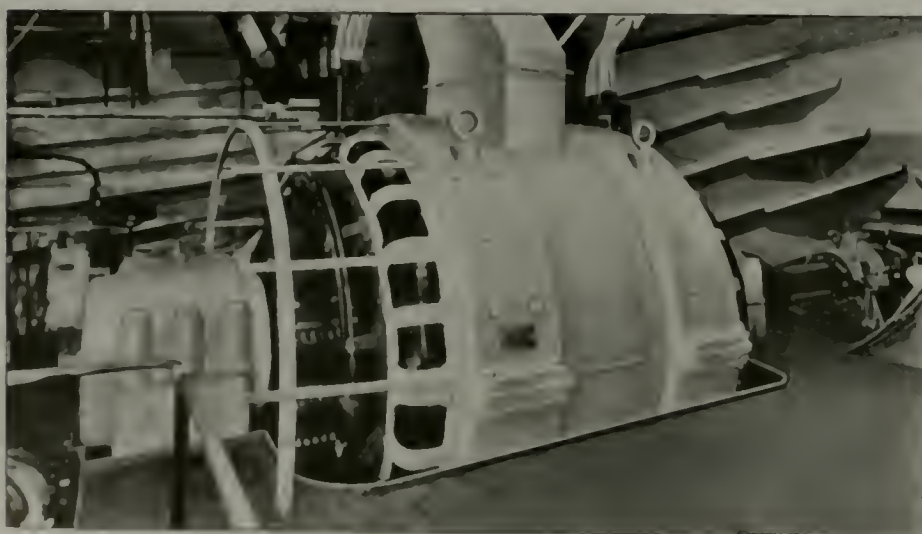
The diesel-electric plant consists of three 6-cylinder, 19 inches by 24 inches 4-cycle single-acting Price Rathbun solid injection type diesel engines, built by Ingersoll-Rand Company, each direct connected to a 600 kilowatt, 250 volt Westinghouse direct current generator and a Westinghouse 50 kilowatt exciter. Each of these diesel engines develops 840 brake horsepower at 225 revolutions a minute. They are operated with a compression of 350 pounds, mean effective pressure of 68 pounds, and an injection pressure of approximately 3000 pounds per square inch. An automatic governor of simple design controls the engines at constant speed through a by-pass system on the fuel pump

and an over-speed governor automatically shuts the engine down at 15 per cent overspeed should the first governor fail to work. The generators are connected in series through the switchboard to the main driving motor. Any generator may be taken out of the circuit. They are also arranged to operate at fixed voltage to supply power to the main cargo pump motors.

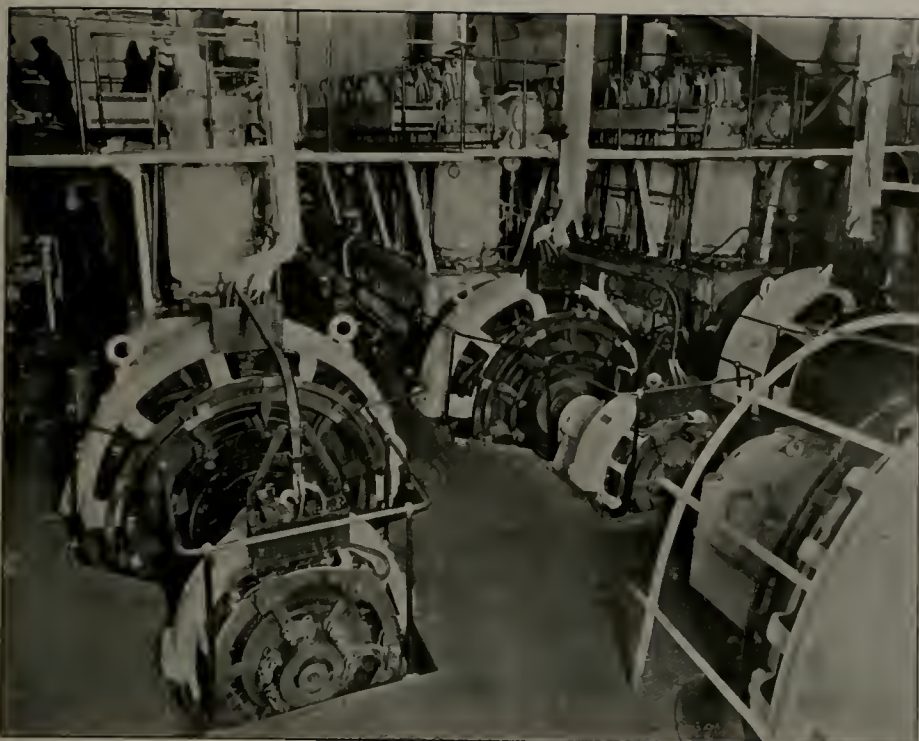
The propelling motor is a Westinghouse double-armature, direct current, 750 volt unit, delivering 2300 shaft horsepower. It is direct-connected to the propeller shaft through a Kingsbury thrust bearing and is designed to develop full power at 100 revolutions a minute. The armatures, while mounted on the same shaft, are independently wired, so that either one may be operated with the other in neutral so far as electric connection is concerned. The motor is cooled by positive air circulation.

Control

The propulsion motor is controlled by Ward Leonard system of variable field excitation, with controls located in the pilot house. The only necessary departure from complete pilot house control occurs when a generator is shut down and taken out of the circuit for any reason. Shutting down of one generator reduces the voltage by one-third and also reduces the speed of the drive motor by the same proportion. The power required to



Westinghouse double-armature direct current motor as installed on the tanker J. W. Van Dyke.



J. W. VAN DYKE

Above is shown the engine room of the diesel-electric tanker J. W. Van Dyke. In the background may be seen the three generating units, each consisting of a 6-cylinder Price-Rathbun solid injection type Ingersoll-Rand diesel engine, developing 840 brake horsepower at 225 r.p.m., direct connected to 600 kilowatt Westinghouse direct current generator and 50 kilowatt exciter. In the left foreground may be seen the forward end of the 2300 horsepower direct current double armature Westinghouse propulsion motor. Illustration at right shows Westinghouse motor driving Ingersoll-Rand two stage auxiliary compressor. Illustration below shows the Hyde electric windlass and warping winch.

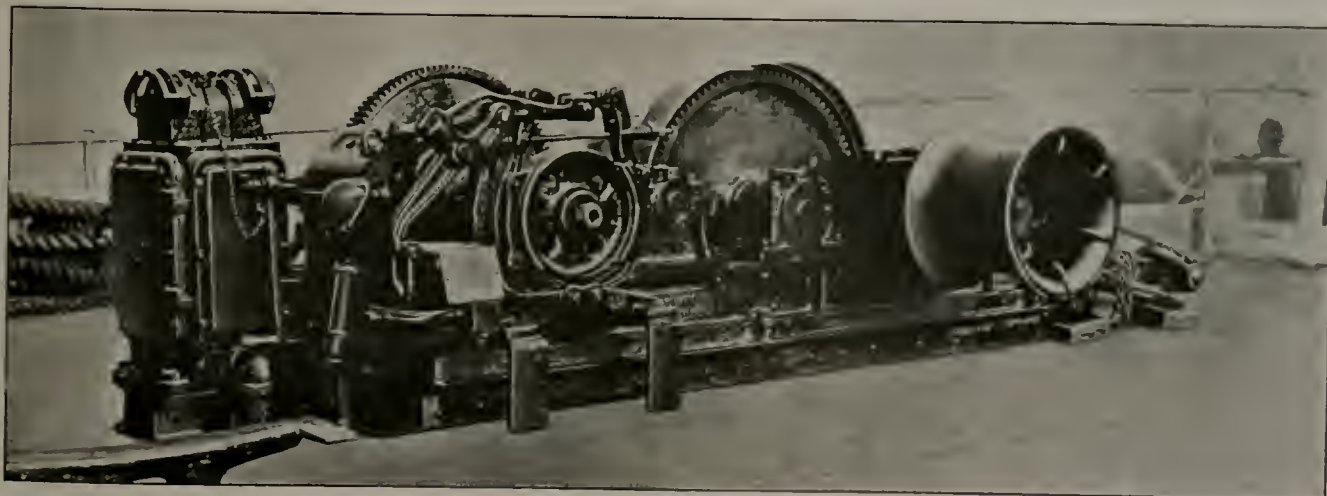


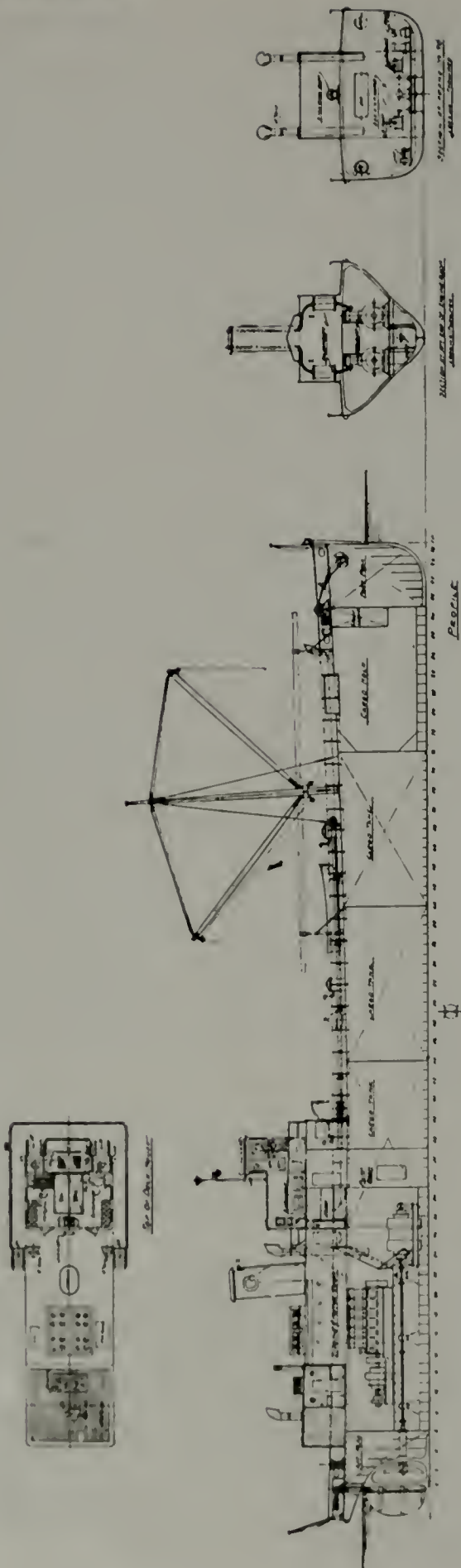
drive the vessel is proportional to the cube of the speed and hence under this condition the propeller would be revolving too slowly to absorb the power coming from the other two generators. It is necessary, then, for the engineer to use switchboard control to weaken the field of the main driving motor in order to speed up this unit to a point where the propeller can absorb this full power. This adjustment having been made on the switchboard, pilot house control is resumed under the new conditions.

When in port the generators are placed in operation on fixed voltage and their load distributed to the cargo pumps and other auxiliaries through the main switchboard.

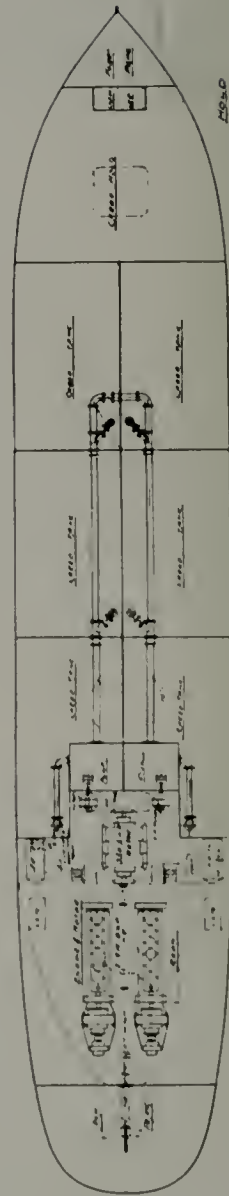
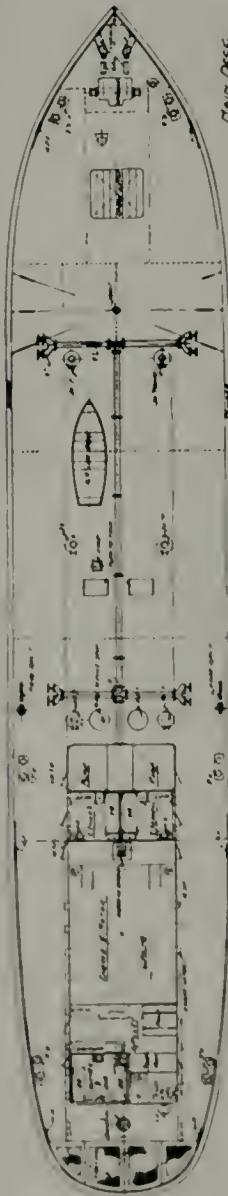
Cargo Pumps

The cargo is handled by two Northern rotary pumps, 8-inch suction and 8-inch discharge, each of these having a capacity of 2200 barrels per hour and each driven by a direct-connected 75 horsepower Westinghouse motor operating at 1200 revolutions a minute. These two motors are enclosed in a separate compartment amidships, the drive shafts to the pumps passing through a stuffing box in a gas-tight bulkhead. Rheostat controllers for these pump motors are located in the main engine room and are operated by a small motor controlled by a push button in the pump room. An electrical meter is attached to each pump and indicates on a dial the output in barrels per hour. Thus when operating the pumps the starting button is pushed in and held until the speed of pumping desired is indicated on the dial. The button is then released, stopping the actuating motor of the controller, and the pump continues to revolve at the same speed until the desired amount of cargo has been removed.





General Dimensions	
Length O.P.	121.2
Length P.P.	118.2
Beam P.P.	18.2
Beam M.L.	17.0
Depth M.L.	11.0
Capacity	40,000 tons



Inboard profile, deck and hold plans, and sections of the diesel-electric tank barge building for the General Petroleum Corporation at the Union Plant of the Bethlehem Shipbuilding Corporation, Ltd. This vessel will be powered with two Atlas-Imperial 6-cylinder, 250 brake horsepower diesel engines.

DIESEL-ELECTRIC BAY TANKER

Atlas-Imperial Engine Enters Electric Drive Field with Installation on General Petroleum Corporation Bay Tanker Now Building at Bethlehem Shipyard

THE diesel-electric tanker for bay service now building at the Potrero Works of the Union Plant of the Bethlehem Shipbuilding Corporation for the General Petroleum Corporation is an interesting example of the adaptability of the electric drive to this type of service.

The vessel will be of 6000 barrels capacity and her general dimensions are: Over-all length, 176 feet 6 inches; length between perpendiculars, 170 feet; breadth, molded, 32 feet; depth, molded, 14 feet; draft, loaded, 11 feet 6 inches.

As will be seen from the plans reproduced herewith, the hull is divided by six bulkheads into seven spaces, the forepeak tank, cargo hold, three cargo tanks, machinery space, and the afterpeak.

Quarters for crew and officers, galley, mess room, and sanitary arrangements are provided for in the deckhouse aft.

Propulsion Machinery

Power is provided by two 6-cylinder, 4-cycle, solid injection Atlas-Imperial full diesel engines of 250 brake horsepower each at 275 r. p. m. These engines are each direct-connected to a 175 kilowatt, 115 volt, direct-current generator and a 20 kilowatt exciter of Westinghouse manufacture. When the vessel is under operation, these two generating sets are connected in series through Westinghouse-Ward Leonard pilot house control to the propulsion motor. This motor is a 350 shaft horsepower, double armature, 230 volt unit of Westinghouse make and drives the propeller at 100 r. p. m.

It will be noted on the plans that the motor is placed forward of the engines and directly on the tank tops, while the two engines are on a platform supported by brackets and forming a boxed and covered alley for the propeller shaft.

The engines are of 11 inches bore and 15 inches stroke, and are being especially built for this job, which is the first marine diesel-electric installation of the Atlas-Imperial Engine Company.

The Engines

The Atlas-Imperial engines are of the 4-cycle, mechanical injection type. Ignition is accomplished by heat of compression, air being compressed in the cylinder to approximately 380 pounds per square inch, giving an ignition temperature of approximately 900 degrees. Fuel is injected a few degrees before upper dead center, being sprayed into the heated compressed air. The rate of injection is graduated so that combustion takes place without explosive violence. These engines may be started with compressed air at pressures from 60 to 200 pounds per square inch and will take full load in from four to ten seconds from the cold engine. The air tanks and entire compressed air system as supplied for standard equipment are built and tested for a working pressure of 250 pounds per square inch.

The fuel oil system is of the constant pressure type. Three plunger pumps driven by cranks from the camshaft deliver fuel oil into the high pressure system, which is connected by a branch pipe to each spray nozzle in the center of the cylinder heads. An addi-

tional branch leads to a pressure regulator, and a relief valve, which by-passes all oil not required to maintain constant pressure. In this system each spray valve is mechanically opened by a cam actuated lever at the proper time in the cycle just enough and for a sufficient length of time to gradually inject the proper quantity of fuel for the power required.

The speed and power developed by the engines are regulated by the governor, which is of the fly-ball type driven by the gearing from the cam shaft and running in oil in an oil-tight case. This governor changes the adjustment of the valve lifter by means of a wedge to hold the spray valve open for a longer or shorter period. Under constant pressure, the longer the period of opening the greater quantity of oil injected. This governor has been found in practice to be very satisfactory and extremely sensitive and will control the throttle automatically for as slow a speed as the kinetic energy of the fly wheel and reciprocating parts will permit. This governor in practice regulates the speed of the engine to approximately 2 per cent of normal. From no load to full load, or vice versa, suddenly applied or removed, there will not be a range of over 3½ per cent.

The inlet and exhaust valves are installed in removable flanged water-jacketed cages, interchangeable in the cylinder heads. The levers operating these valves are on top of the cylinder heads and are actuated by steel push rods and lifters. The lifters are provided with large anti-friction rollers of special steel hardened and ground. These rollers slide on cams ground to gauge in special cam grinding machines. These cams are mounted on the cam shaft with keys to prevent any possibility of their slipping out of line.

An air compressor of 250 pounds capacity is mounted on the center frame and driven by an eccentric on the main crank shaft. This compressor will give ample volume to replenish starting air and furnish supply for the whistle. A simple adjustment permits of the air intake valve being held open so that the compressor will run light without absorbing power.

Atlas crank shafts are forged from special crank shaft steel, United States Navy specifications, tested and inspected by the American Bureau of Shipping. Connecting rods are also solid steel forgings from the same material as the crank shafts and are fitted with hard phosphor bronze wrist pin bushings and with cast steel white bronze marine type crank pin boxes. These boxes are fastened to the rods with blue steel bolts, double nuts, and cotter pin. All bearings are interchangeable, being machined and bored to jig.

Pistons are made from special mixture close grained gray cast iron, carefully machined to precision and of sufficient length to insure minimum wear and long life. Wrist pins are of special hardened steel ground to size and with large bearing surface in the piston wall.

Each cylinder in these engines is cast separate of a special semi-steel mixture of high tensile strength. Ample water jacket space and large cleaning out openings are provided. The cylinders are made inter-

NEW DIESEL-ELECTRIC FIRE-BOAT

THERE is now under construction at the Harlan plant of the Bethlehem Shipbuilding Corporation, Wilmington, Delaware, a fireboat for the city of Houston, which has been designed by Cox & Stevens of New York and is being built under their supervision.

The architects, after receiving the commission to undertake the work, made an extensive investigation of the whole subject, and taking into consideration what had been accomplished in the various ports of the United States in fireboat design, decided to adopt diesel-electric power in the new boat. As the fireboat is really a power house moved from point to point by its own machinery and carrying a most powerful pumping system with it, the diesel-electric combination forms an ideal installation.

The dimensions of this fireboat are:

Length over-all	125' 10"
Length on water line.	117' 6"
Beam	27'
Draft	8' 6"

The vessel is built of steel throughout, in excess of the requirements of the classification societies, which produces a rugged hull that can be worked alongside of docks or against other vessels without damage. The hull is flush deck with moderate freeboard and rather straight sheer, and has a high bulwark extending fully around the boat from stem to stern.

The machinery is placed practically amidships, the officers' and crew's quarters being on the berth deck forward, the berth deck aft being assigned to an engineer's workshop with quarters for engine room department. The galley and mess room are in the deck house forward of the stack, upon which are located the pilot house and the usual navigating instruments.

At about one-third the vessel's length from the stern there is located a fire tower with a large nozzle, controlled from a platform part way up the tower, the upper portion of which, as well as the stack, being so located that the fireboat can pass under bridges of a specified height. In addition to this after water tower, two other water towers or turrets are placed practically amidships, one on each side aft of the stack, these towers having upon them large and powerful



Artist's drawing showing new diesel-electric fireboat for the city of Houston.

nozzles and at their bases being fitted with hose connection so that streams of water may be carried at will in whatever direction desired.

On top of the pilot house another large nozzle or turret is mounted and there is still another turret nozzle located on the forecastle. As an addition to these five large turret nozzles, the boat is equipped with numerous nozzles that may be shifted to any place along the rail at either side. It will be seen that fire streams can be directed at will in any direction and at various heights so as to take account of the conditions existing at any fire.

Power Plant

After considering the various makes of apparatus in the market, it was finally determined that a combination of the diesel engines manufactured by the Winton Engine Works and the electric equipment furnished by the Westinghouse Company offered the best solution of the problem. Accordingly there will be installed two 500 horsepower Winton, 4-cycle diesel type engines, each driving at 420 revolutions per minute, a 350 kilowatt, 500 volt, Westinghouse generator, and a 25 kilowatt, 125 volt, exciter. These generating sets are connected up to the various motors by the Ward-Leonard system of pilot house and engine room control and can be instantly switched from the two 360 horsepower, 500 volt, single armature propulsion motors to the two 410 horsepower, 500 volt fire pump motors; or the power can be divided between the propulsion and pump motors; or anyone or all of the motors can be disconnected from the power circuit. The revolution of the propulsion motors can be

varied and held at any speed, driving the propellers up to 265 revolutions per minute in either direction.

When all the power of the main generating units will be required for the fire pump motors, then an auxiliary engine driving a 100 kilowatt, 270 volt double armature Westinghouse generator will supply power for propulsion and maneuvering. This flexibility of power manipulation, which is not possible with any other form of drive, will enable the fire chief or pilot to maneuver the fireboat to a most advantageous position and at the same time control the flow of water up to 7000 gallons per minute against 150 pounds pressure for fighting fire, or 3500 gallons per minute against a head of 300 pounds per square inch.

The propelling motors are designed to give additional power so that the fireboat can be used for emergency towing purposes, thus making it possible to tow a burning ship away from adjacent traffic or piers.

Fire Pumps

The size and capacity of the pumps are designed to give the necessary volume to handle the following number of outlets of the sizes enumerated below:

After tower nozzle,	
2½" outlet	3100 gal. per min.
Turret nozzles, 2,	
1¾" outlet	3000 gal. per min.
On top of pilot	
house, 1, 1½" out-	
let	1100 gal. per min.
On forward deck,	
1, 1½" outlet	1100 gal. per min.
Total No. 5	8300 gal. per min.

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APPLICATION OF ELECTRIC PROPULSION TO DOUBLE-ENDED FERRYBOATS

THE marine fraternity on the Pacific Coast are very much interested in the application of diesel-electric and turbo-electric machinery to ferryboat propulsion, and hence the thoughtful paper on this subject prepared by A. Kennedy, Jr., and Frank B. Smith, both of the Marine Engineering Department of the General Electric Company, is very timely and will be the subject of much discussion. This paper was read at the Seattle meeting of the American Institute of Electrical Engineers on September 15, 1925. We herewith abstract this paper for the benefit of our readers, and reproduce in full some of the tables of tests used by the authors.

The paper refers specifically to the "application of electric propulsion to double-ended ferryboats." This type of ferryboat is becoming standard for practic-

ally all new construction on the Pacific Coast and largely so on the Atlantic Coast and Great Lakes. The electric drive is peculiarly suited to this construction because of the ease with which the screw at each end of the ferryboat may be driven upon independent motor under one pilothouse control and with much flexibility of design as regards the location of the main generating units.

It has been found most economical to drive these ferryboats with the after screw, the bow screw revolving at sufficient speed merely to make its thrust neutral. Records of tests show that with the two screws driven at the same speed, 25 per cent more power is required than if the boat was equipped with one screw at the stern. On the other hand, with the separate drive, as in electrical method of propulsion, and with the screw operated at neutral thrust speed, there is an additional expenditure of power as compared with one screw at the stern of approximately 5 per cent. This comparison is fortified by tests made with a reciprocating steam engine driven type of double-ended ferryboat as recorded in a paper read before the Naval Architects and Marine Engineerings in 1912. These tests are shown in Table 6 reproduced herewith. In pulling with bow screw only, stern screw removed, 50 per cent more power is required than when pushing with the stern screw only. Pushing with the stern screw only is the most economical method of propulsion but is not practicable for this type boat on short runs on account of the time lost in maneuvering in and out of slips or up to wharves. Driving with bow and stern screw at the same revolutions per minute shows, as it did with tests on the electrically propelled boats, a requirement of approximately 25 per cent more power than in pushing with stern screw alone.

The general conclusions reached are:

Kv-a.	P.F.	Eff.	Kw. Input	Kw. Output
2230	74	94	1650	1550
2207	76	94	1675	1575
2190	76	94	1660	1560
2160	75	94	1620	1525
2036	73.5	93.9	1495	1405

Forward Motor				
Kv-a.	P.F.	Eff.	Kw. Input	Kw. Output
169	53	83.5	90	75
153.5	57	84.5	87.5	74
199	64	84.0	127	107
162	57	84.3	92.5	78
143	49	82	70	57.5

Run	Aft Motor				Forward Motor			Total Motor Excit.		Knots	Remarks
	Line Volts	Line Amps.	R.P.M.	Kw. Input	Line Amps.	R.P.M.	Kw. Input	Fld. Amps.	Fld. Volts		
1	475	1138.6	173.3	540	59.3	138.6	28.2	121.7	115	11.75	Against
2	470	1031.6	174	485	88.3	139.5	41.3	122.6	115	12.25	With
3	470	1142	174	537	77	143.2	36	124.2	115	11.5	Against
4	472	1000	172	472	130	144.2	61.2	121	115	12.1	With
5	511.6	1406.6	193.5	718	53.3	157.1	27.1	103.6	115	11.75	Against
6	511.6	1295.3	193.5	661	98.3	158	50.2	98.3	115	5.3	With

Run	Aft Motor		Forward Motor		Total Motor Excit. Kw.
	Kw. Input	Kw. Output	Kw. Input	Kw. Output	
1	540	507	28.2	22.5	14
2	485	457	41.3	35.5	14.1
3	537	505	36	30.2	14.3
4	472	445	61.2	55.1	13.9
5	718	672	27.1	21.4	11.9
6	661	620	50.2	44.3	11.3

Run	Aft Motor			Forward Motor		
	Amperes	Volts	R.P.M.	Amperes	Volts	R.P.M.
7	975	480	170.6	0	0	123.7
8	975	475	171	0	0	124
9	1000	475	170	0	0	126
10	1000	475	170	0	0	125
11	980	475	170	0	0	126
12	960	475	170	0	0	126

Knots	A	B	C
	Pulling with Bow Screw, Stern Screw Removed I. H. P.	Pushing with Stern Screw, Bow Screw Removed I. H. P.	Propelling with Both Screws at the same R.P.M. I. H. P.
<i>Ferry-boat Edgewater</i>			
8	255	178	222
9	370	245	312
10	560	345	440
11	850	500	612
12	1270	740	840
<i>Ferry-boat Cincinnati</i>			
9	443	250	332
10	638	364	464
11	880	520	624
12	..	720	816

References: Trial trip data of *Edgewater* from paper presented by E. A. Stevens and Chas. P. Paulding, before Society of N. A. & M. E., November 20, 1912.

Trial trip data of *Cincinnati* from paper presented by F. L. Du Bosque before Society of N. A. & M. E., November 12-13, 1896.

1. That the reciprocating steam engine or diesel engine, in which the bow and stern propellers are operated at the same revolutions per minute, require

approximately 19 per cent more power than the electric system, due to difference in propulsive efficiency.

2. That the fuel consumption of the reciprocating steam engine drive with the direct connected bow and stern propellers requires approximately 40 per cent more fuel than the turbine electric system, due to the difference in propulsive and thermal efficiencies.

3. That the operating records of the boats in service prove electric drive to be reliable and a great step forward as a method of propulsion for the double-ended type of ferryboat.

4. That in the comparison of turbo-direct current and alternating current, the direct current is superior in flexibility, simplicity of control, and general handiness afforded by bridge control. That the alternating current, however, is slightly more economical as regards fuel consumption.

5. That both turbo-electric and diesel-electric drive overcome the inherent propulsive efficiency loss of the reciprocating steam engine type of drive and that their respective spheres of application are dependent upon the relationship of first cost to operating charges and needs of service.

STEVEDORING AMERICAN CARGOES

(Continued from Page 450)

ment called for 966 pieces and 1646 bundles. The outturn tally showed a shortage of 96 bundles, and the Wharf Company issued a "short landed memo" for that number of bundles, whereupon the consignees made a claim against the ship for 22,084 pounds valued at Shanghai taels 800, and the agents served notice on the tallying firm that they would hold them responsible for the shortage, as the master of the ship was very positive in his statements that the cargo had been correctly tallied into his ship by three of his officers, one checking the other.

After a long and careful investigation, it was found that the supposed shortage consisted entirely of bundles of $\frac{1}{2}$ -inch iron bars 40 feet long. The manifest and bill of lading called for 276 bundles, 1656 pieces, 33,660 pounds, whereas the outturn was 175 bundles. On checking the number of bundles actually landed and the number of pieces of each bundle, weight was 33,775 pounds, a slight overage over the bill of lading weight; i. e., 33,660 pounds; whereas if there had actually been shipped 276 bundles, the weight should have been 53,268 pounds. This was confirmed by the invoices which were examined during the consideration of this claim, the whole trouble being in the fact that both the bill of lading and the manifest were in error to the amount of 101 bundles, and that the tally by the ship's officers at the time of loading was incorrect to the extent of 101 bundles.

A somewhat similar incident recently occurred when another vessel arrived at the same port. The manifest and bill of lading, amongst other items, called for 2304 bundles of flooring, whereas the outturn was 2217 bundles. As a claim would have been formulated, which would have probably been lodged with the tallying firm, the consignee's specification was examined, and it was found that the shipment consisted of 2201 bundles, not 2304 bundles, as per manifest; thus showing that the outturn was 13 bundles over, and in this particular discharge the rough lumber also showed an overage of 28 pieces.

Collusion

The foreign agent had the following to say about the matter:

"In connection with the discharge and tally of lumber, this office has no hesitation in stating that there can be no question that the shortages so frequently reported in the past were the result of collusion between the stevedores and the tallymen. Where dealing with stevedores and tallymen is concerned, there is always the prospect of shortages arising and especially in cases where discharge is in the stream, or at public wharves, where there are practically no measures taken by the wharf company to safeguard cargo against theft and pilferage. The various operators are doing the best they can by employing watchmen, but shortages will undoubtedly occur from time to time; however, it is felt that the worst of the evil which was due to negligent or improper tally service has now been overcome."

In connection with the activities of the Stevedoring and Terminals Committee of the Emergency Fleet Corporation, of which I am a member, we have not overlooked the important condition precedent to the cargo handling cost; namely, stowage. Our slogan has been "The lowest cost commensurate with good stowage."

WHALEY ENGINE

(Continued from Page 456)

The Whaley Engine Patents, Inc., own the patents for the western hemisphere. The International Whaley Engine Corporation own the patent rights for the eastern hemisphere. The American Locomotive Company own the exclusive license for the use of the Whaley engine on rails for the western hemisphere. The Sun Shipbuilding & Dry Dock Company has a contract for building these engines for marine and stationary use in the United States. The engineering firm of Parish & Tewksbury, Inc., of New York, has had executive charge of this development since February, 1924.

PACIFIC WORKBOATS AND THEIR POWER PLANTS

THE POWER PROBLEM OF THE SMALL BOAT OWNER

THE huge increase in the building of motorships during the past few years has brought about no end of discussion as to the merits of different types of prime movers for vessels of various types and sizes and in different kinds of service. It would seem that greater inroads have been made upon steam equipment by the motor builders than would be apparent at first glance, judging from the alarm evidenced by the builders of the former type of power machinery. A highly interesting article upon the subject of diesel versus high pressure steam power was published in *Pacific Marine Review* at the beginning of this year, both sides of this question being given by individuals interested in the two types of prime movers, in order that our readers might have the complete data and arguments put forth by manufacturers of both classes to compare and judge for themselves.

Along the line of bringing out the various types of power equipment for vessels of all classes, with their merits and advantages as claimed and set forth by the various manufacturers and those most interested in the types of equipment under discussion, a representative of *Pacific Marine Review* recently made a brief investigation of the power situation on the Pacific Coast, particularly in so far as small boats are concerned, which undoubtedly will prove usable material for a number of interesting and instructive articles on this subject during the immediate future.

In years past, the majority, if not practically all of the smaller boats, such as tugs, workboats fishing boats, etc., have been powered with ordinary gasoline engines of standard construction. When these boats first were built and equipped, gasoline was a much more economical fuel than it is today. It therefore was undoubtedly the most efficient as well as economical and logical power for such boats at that time.

High Gasoline Costs

Everyone is familiar with the tremendous increase in the consump-

tion of gasoline and allied products during the past decade. The automobile has made such extensive inroads upon the supplies and sources of this high grade fuel that prices frequently have soared to unprecedented heights and finally have continued strong at much higher levels than the old standards, and even the present figures are by no means to be considered as the final high point for this fuel if consumption continues as in the past.

Whatever the outcome in so far as sources and prices are concerned, however, the fluctuations and conditions brought about by the high prices have actually worked great benefits for the small boat owner and operator, although this may not be his candid opinion just at the time when he might possibly be compelled to face the issue under somewhat unfavorable circumstances. Nevertheless, that is exactly what it has done for him and every industry in any way connected with the utilization of small boats.

Oil Engine Development

There has been a greater development of engines of the crude oil, and so-called semi-diesel and the full diesel types in smaller sizes to replace those requiring the high grade and higher cost fuel, which has brought about an era of development and progress that otherwise could not have materialized. And, of course, progressive development such as this, regardless of the cause, can only work to the advantage and development of the industry or industries in which it takes place.

Many conversions of vessels of almost all types from gasoline and gas engines to crude oil, semi-diesel, and even full diesel engines have been made during the past few years. In fact, a much larger percentage of the small boats have been converted than the average operator would believe without actually investigating the matter thoroughly. In the beginning these conversions were few and far between, the owners being averse to making

investments and scrapping their present equipment, or selling at a big reduction in value, even though the result practically could be guaranteed. As the many advantages of the new equipment were developed through actual service, however, the conversions were increased without much noise or hubbaloos until now the percentage of small boats using this higher type and more economical power is very large.

Full Diesel Type

There is no question of the advantages to the owner and operator of the new type of power equipment, especially the full-diesel type of internal combustion engine. Unfortunately for the small boat operator, this type of engine has not been manufactured in sizes or types that were practical for his purposes and needs until just a year or so ago.

The decided and distinctive advantages of the diesel type of engine are well known to every man well versed in power practice and power equipments. Since the development of this type of engine on a commercial basis more than a quarter of a century ago, there never has been any argument as to its supremacy as a prime mover. The only obstacles encountered were in the classes of service to which it was adaptable. It was, of necessity, a very complicated piece of apparatus, required highly skilled engineers and attendants, and entailed tremendous investments as compared to ordinary plants of different types.

In dependability and economical operation, however, it more than paid its own way in service where such installations were justified. But the heavy investments and complicated operation prevented its adaption and practical use for small power purposes until quite recently. And the development of this type of full-diesel prime mover, in sizes and types adaptable and practical for the small boat, is one of the benefits resulting from the high cost of high grade fuel.

The diesel engine should not be

confused with the so-called semi-diesel or oil engines. There are many types of the latter engines on the market now, but the full-diesel engine is the one we refer to particularly throughout this article, and there is a vast difference between this and the other two. The outstanding advantage of the full-diesel type of engine is the extraordinary economy in operation and upkeep. The efficiencies of the full-diesel engine are the highest ever developed in power practice, ranging far above that of the ordinary gas and gasoline engine, and so far above the steam engine that these two can hardly be considered in the same class in this particular respect.

Fuel Savings

The full-diesel engine burns the very lowest grades of fuel oil that is possible for any internal combustion engine to use. And yet, it obtains higher efficiencies on these lower grades of fuel, which are correspondingly lower in cost and more plentiful in supply, than the other types of engines record on the higher grades of fuel. The savings effected in fuel costs alone are exceptional, as will be immediately apparent to experienced operators. And since the full-diesel type of engine has been simplified to an extent that makes it readily adaptable

and practical for the smaller installations, the savings extend right through maintenance and longevity in direct, or even greater, proportion.

Among the hundreds of small boats on the Pacific Coast equipped with full-diesel engines during the past year or two, there is not one with which we have come in contact but has recorded savings sufficient to cover the entire cost of conversion within a very short period of time. Most of these operators were skeptical of the advantages to be derived by converting, being more or less unsold on the adaptability and practicability of the full-diesel engine for the service involved. They were more convinced of the practical success of the oil engine and so-called semi-diesel engine, and in many cases actually preferred these types of prime movers. And yet, there is no comparison in the advantages and economical operation and upkeep, and the longevity of the full-diesel and the two former types of engines.

Today there are hundreds of the smallest tugs and fishing boats equipped with full-diesel power, generally conceded to be the highest type of power ever developed. It has proved beyond any question of a doubt to be the most econom-

ical and dependable power adaptable for these boats, and in practically every instance these engines have returned their cost within a few months, and then continued to pay dividends and additional profits to their owners. We are advised that the savings in operating costs have ranged as high as 80 per cent in comparison to previous power used. And this advice comes to us from sources which are unquestionable.

Progress must be made in every branch of every industry, and while any real modern development of the power equipment for small boats has been a long time coming, it is here now and the small operator is on exactly the same footing as the largest ship owner in that he has just as efficient, just as dependable, and just as economical power. It is hoped that the owners and operators of the smaller boats will avail themselves of the many opportunities open to them to investigate the performance and records of this new type of power, for it surely seems to be only a matter of time until practically every small boat of every description must come to this new standard of economical power for its operation, and it will be better for all concerned if that time is hastened rather than delayed.

CONVERTING THE FISHING TRAWLER JEFFERSON

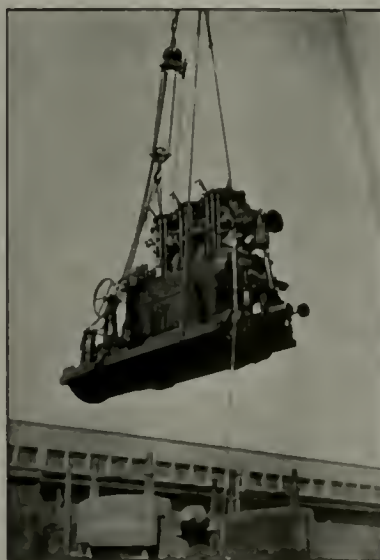
By DAVID W. DICKIE

THE Standard Fisheries Company of San Francisco had such good success with the diesel engine in the trawler E. Antoni that they decided to convert the gasoline trawler Jefferson to diesel drive.

The Jefferson is somewhat smaller than the E. Antoni, the dimensions being as follows:

Length over-all	60 ft.
Length, registered	53.9 ft.
Beam, registered	15.7 ft.
Depth of hold	5.6 ft.
Gross tonnage	26.05
Net tonnage	11.37
Horsepower (diesel)	100

The vessel was originally fitted with a 12-inch diameter 14-inch stroke gas engine, and after carefully balancing loss of speed, saving of weight and fuel, reduction in fuel consumption, Mr. Martinelli, manager of the Standard Fisheries, decided to put in a 9½-inch x 14-inch full diesel engine.



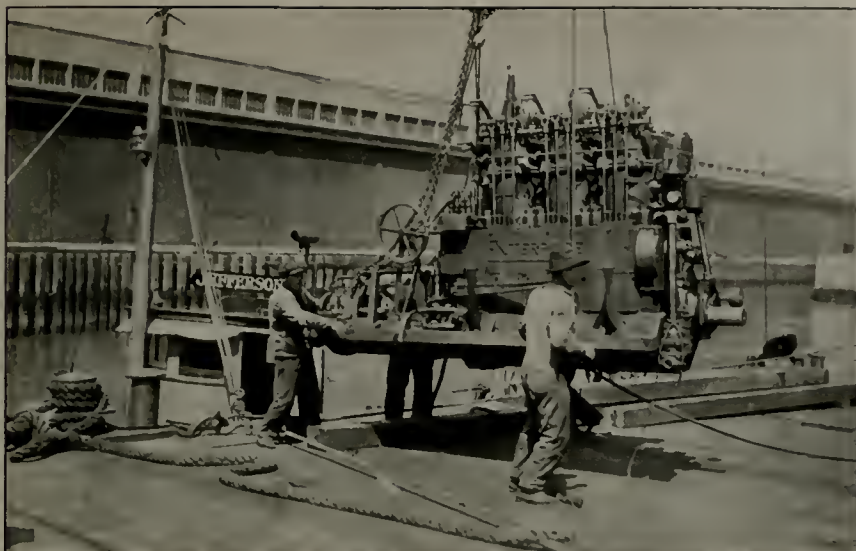
Unloading Western-Enterprise diesel engine from the truck for installation on the trawler Jefferson.

Instead of ballasting the boat so as to give it a port list as required

in the fishing business, Mr. Martinelli omitted the fuel tank on the starboard side and had the water tank placed on the port side, so that when all the tanks are full with fuel oil, water, and lubricating oil, the boat has a list of six inches to port. When the six coils of rope were stowed on the starboard side the boat came very nearly on an even keel.

The reason for the list is that in order to keep the boat dry the freeboard should be about twenty inches, and in order to handle the net and clear it the freeboard should be about sixteen inches.

If the boat is given a list of eight inches the freeboard on the low side will be sixteen inches and on the starboard side twenty-four inches. When the fish is distributed in the bins and the rope is coiled on the starboard side, the boat is on



Close-up of the 3-cylinder, 100-horsepower Western-Enterprise, solid injection, full diesel engine for the fishing trawler Jefferson.

an even keel and has gone down about two to three inches.

The hull work was done by Anderson and Siemer at their shipyard on Hunter's Point boulevard, under the supervision of David W. Dickie. The old engine was removed from the boat by Smith-Rice & Company, riggers, and taken to the Western-Enterprise shop.

The hull was hauled up on the ways and the old engine foundation removed. A new engine foundation 14 inches sided and 16 inches molded was fitted in place, cross bolted and through bolted to the frames and planking. The outside planking was caulked all over and the keel, keelson, and sister keelsons were refastened with through bolts.

All of the fuel tanks were disconnected from the deck and the filling pipes finished below. Large deck plates were put in, making an arrangement that prevents salt water from getting into the fuel, over into the engine, and finally depositing the salt in the lubricating oil in the base of the engine.

The engine is the solid injection high pressure full diesel type manufactured by the Western Machinery Company, having three cylinders $9\frac{1}{2}$ inches diameter and 14 inches stroke, turning 320 revolutions per minute.

The trawling winch is attached to the fore end of the engine and fish washing system pumps and attached to the main engine in lieu of the regular centrifugal pump that is usually fitted. The engine is fitted with three pumps, one for the circulating water, one for the bilge of the plunger type, and a fish pump of the centrifugal type. All three

pumps are connected to the bilge and sea.

The electric system was overhauled and brought up to date by Ets-Hokin and Galvan. The auxiliary engine is the 4-horsepower Standard Gas Engine Company type with one cylinder a gas engine $4\frac{1}{2}$ inches diameter and one cylinder a compressor $3\frac{3}{4}$ inches diameter having a common stroke of 5 inches and turning 600 hundred revolutions per minute.

The trial trip was run on the Mail Dock Mile with a propeller 50 inches diameter, 38.89 inches pitch, 37.9 per cent area, three blades of the elliptical pattern. The speed obtained was 9.065 miles, 7.881 kno's, with the engine turning 320 revolutions per minute, and 22.98 per cent slip. In order to improve the speed

at sea the shape of the propeller blade was changed from the elliptical by narrowing the blade from 12.12 inches to 10.62 inches at a point 8 inches from the center line of the shaft and widening it from 13.2 inches to 15.5 inches at a point 19 inches from the center line of the shaft, keeping the other characteristics constant, the new surface ratio being 39.76 per cent. The vessel was then run on the Mail Dock Mile, making the same speed as before, the engine turning 307 revolutions per minute.

The principal improvement was the speed at sea. With the second wheel, an improvement of fifteen minutes was made in the running time between Leavenworth Street Dock and Drakes Bay, notwithstanding the fact that the vessel made exactly the same speed over the mile course in San Francisco Bay.

TRADE LITERATURE

The Kuhlman Electric Company of Bay City, Michigan, have recently published a very interesting handbook on the electrical transformer. This bulletin is out of the ordinary in that the manufacturer does not talk about his product in the text. The new Kuhlman bulletin is brimful of practical engineering data and material for the electrical or consulting engineer, and the man who operates transformers.

A copy can be secured by writing the Kuhlman Electric Co., Bay City, Michigan, and asking for handbook "Thirty Years of Uninterrupted Service to the Electrical Industry."



Jefferson on her trials.

A CALIFORNIA WHALING STATION

ABOUT six years ago, the California Sea Products Company established a whaling station at Trinidad, some 25 miles north of Eureka, California. The location is admirable for the purpose, as Trinidad Rock shelters the place and its remoteness from residential districts precludes any complaints to the odors. Because there are odors, and strong ones, too. The rendering of whales into commercial products obviously is not a perfume factory.

Without going into any elaborate description of the various processes, it can be briefly said that the whales, after capture, are towed to port and hauled out on a ways by heavy steam winches, where they are cut up into sizable chunks. The heavy meat parts are cooked down for chicken feed; the blubber is digested into oil; the offal steam dried and made into fertilizer; and the bones are ground into bone meal. Nothing escapes but the smell, and that drifts down to leeward with the prevailing coastal winds.

A fleet of three power boats, equipped with lance guns, cruise around within a radius of a hundred miles, hunting the big fish. (We shall call them fish, though they are mammals.) The catch may be large, fair, or nothing. Fisherman's luck goes in whaling as well as in other similar ventures. However, in the season of 1923, 115 whales were caught during the month of May. This year only 52 were captured so far.

A crew of 35 is employed this summer, though 60 hands are busy when the fish run heavy. These men are nearly all former seafaring folk, and are sturdy, bulky chaps. Every convenience in the way of living and comfort is provided for them, and all hands seem happy.

Captain F. K. Dedrick is the president and manager of the company. He is ably assisted by the plant superintendent, John Marmo, who for the past twenty years has been engaged in the whaling industry.

From these gentlemen it was learned that an average fish produces about 60 tons of chicken feed, 37 barrels of oil, 3 tons of fertilizer, and 1 ton of bone meal. The values of these products fluctuate with the markets, but a fair profit is made



Looking down the ways at the whaling station Trinidad.

in the business. Prospects are good for this season, and as the season advances another station will be started near Monterey Bay. The one

at Trinidad may be rightly classed as an industry added to the many of Eureka district, increasing as it does the volume of business there.

Billy Burrill of the Boisterous Bar



"Billy" Burrill of Humboldt Bar.

CHIEF ENGINEER WM. P. BURRILL of Eureka is the oldest employe of the Humboldt Stevedore Company of that port. They are the operators of the ocean-going tug Humboldt, of which Mr. Burrill has charge. He carries his sixty years easily, being of good old Maine stock, having been born in Calais in 1865. From infancy his life was spent around things maritime, and during his youth he made many trips to sea, beside working at his trade in the shops. Seeing a

better future in the West, Mr. Burrill came to the Pacific Coast on one of his voyages, and thirty-three years ago entered the employ of the Redwood Lumber Association, as the Humboldt Stevedore Company was then known, as an assistant engineer of the old tug Mary Ann, the first boat of her kind to regularly work over Humboldt Bar. "Billy" Burrill, as he is known to hundreds of friends, was in turn chief engineer of the Mary Ann, Ranger, Buhne, Relief, and Humboldt, all well-known bar tugs. Though the name of the company has been changed, Mr. Burrill is one of the steady assets of the original firm.

He has crossed Humboldt Bar many thousands of times, more than any other man living. He knows the bar too, in all its moods and changes, for beside being an engineer he can handle a tug with the best of them. Mr. Burrill supervised building the machinery of the steamer Iqua, built for his company as a coaster, and was her chief engineer for several months, returning to his beloved bar boats later. He just cannot keep away from it. During his many years' service he has by economy and in-

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DIESEL-ELECTRIC BAY TANKER

(Continued from Page 463)

changeable and are fastened in the base castings by extra heavy studs. These studs run through the center frame and the base close to the main bearings, so as to form a complete yoke always in tension from the cylinder blocks to the bed plate. A cylinder relief valve is provided on each cylinder as a safeguard against excess pressures.

Cylinder heads are also of a special mixture of semi-steel and are especially designed for water cooling and for proper distribution of heat stresses. The cylinder head with the valve arm mechanism can be removed easily without disturbing the intake and exhaust manifolds. The center frame is cast in one piece and is machined to fit on the bed plate within centerline joints. This frame carries the cam shaft in plastic bronze removable bearings. Large oil-tight doors are fitted in this frame, which are easily removed for inspection of crank bearings.

The bed plate forms an oil-tight crank case and pit for the secondary lubricating oil system. The end bearings are provided with slipper ring and recess to drain back into the main base all excess lubricating oil working through the bearing, and the ends of these bearings are covered with a dust and water proof sheet of fiber. After the bore is carefully machined and bored for the bearing shells, the shells are hand scraped to an accurate fit. All internal surfaces of this base are thoroughly treated to eliminate scale and sand and these surfaces are then painted with

a special preparation giving an enamel finish and a perfect lubricating oil receptacle.

A bronze centrifugal water circulating pump is driven by silent chain from a sprocket on the crank shaft, and is connected to the cylinders with brass piping.

Lubrication

A dual system of lubrication is used. The primary system consists of a mechanical forced feed oiler, ratchet driven, and supplying oil to walls of each cylinder. Any waste oil from cylinder lubrication is caught in the oil-tight bed plate and is used as make-up oil for the secondary system. This secondary system supplies oil under pressure to all main bearings, the crank bearings, and wrist pins by drilled passages from the middle of the main bearings diagonally through the middle of the journal and the web of the crank shaft, and thence up through the hollow connecting rod to the wrist pin, dripping back into the oil-tight bed plate from the ends of main bearings, crank bearings, and wrist pin bearings. The oil enters the main bearings at the bottom instead of the top, making a simple arrangement of oil piping and permitting removal of the bearing covers without breaking pipe connections. Waste oil from the bearings flows to a sump through a strainer and is pumped through a cooler to the filtering tank, thence returning to the service tank and pressure pump, which maintains from 5 to 10 pounds per square inch on the system. With ordinary care in operation a gallons of lubricating oil will be ample for every 2000 horsepower hours of service.



PULLING SNAGS

Pacific Coast workboats operating on the rivers often meet with more or less stationary hindrances to navigation. United States Army Engineers are charged with keeping channels clear of these obstructions. Among the most dangerous of these are so-called snags, floating trees or stumps, which have become lodged on the bottom. Our two illustrations show the recently completed snag boat Tuba built by the A. W. de Young Boat & Shipbuilding Company of Alameda for the United States Engineers Service. This boat is now busily engaged on the Sacramento and San Joaquin rivers and their tributaries locating and pulling snags.



"BILLY" BURRILL

(Continued from Page 470)

sight amassed a very comfortable fortune, but still keeps his life work up around the tugs. Besides this, though, he finds time to take an active part in civic matters at Eureka and has been a councilman for the past ten years and is still serving, with a splendid record. It is hoped he will have many more pleasant years before he crosses the Great Bar for the last time.

AUXILIARIES, SHIP SUPPLIES AND MARINE EQUIPMENT

CUTTING METAL UNDER WATER

DURING the present season a mooring wire fouled in the propeller of the steamship Stuttgart was cleared by a diver using an oxy-electric under-water cutting torch, manufactured by the Under-Water Metal Cutting Corporation, 17 Battery Place, New York. This operation marked the successful completion of three similar jobs. Previously fouled wires had been removed by the use of this torch from the propellers of the steamship La Perouse and the steamship Hansa.

In the case of the steamship Stuttgart, one of the 1½-inch mooring wires became fouled in the star-board propeller while the vessel was docking at her pier at Hoboken. The propeller was turning over at the time, and before the engines could be stopped, many turns of wire wrapped tightly around the propeller shaft and wedged in between the propeller and the shaft tube.

Efforts were made at once to remove the wire by slowly turning the propeller and pulling on the free end of the wire. When this proved unsuccessful a diver was obtained. The diver, using a hack-saw, managed to remove one turn of the wire. Then owing to the limited space in which he had to work and the jammed condition of the wire, he could do no more and it seemed as though the Stuttgart would be forced to drydock. The vessel was already partly loaded and drydocking would have caused considerable delay and additional cost. Someone at this time suggested that an under-water metal cutting torch might solve the problem.

Accordingly an under-water cutting outfit was obtained from the Merritt, Chapman & Scott Corporation and delivered to the job. The outfit was connected up. Steam to drive the turbine-driven generating set was obtained from the Stuttgart. A ground wire was attached to the rudder of the vessel and the torch was made ready for the diver. The diver then descended with this cutting torch and in less than three working hours all of the wire was cleared from the propeller and the propeller shaft. In all, sixteen



A Merritt, Chapman & Scott diver, demonstrating the under-water metal cutting oxy-electric torch.

fathoms of wire were removed without damage to the vessel, and the steamship Stuttgart sailed on schedule.

A complete under-water cutting outfit consists of a portable 50 kilo-

watt turbo-driven generating set, switchboard, resistance, conducting hose, torch, oxygen gage, and the necessary wire. The oxygen required is obtained from tanks the same as in oxyacetylene cutting. The steam necessary to drive the turbine can be obtained from a ship's boiler, or the required electric current may be found available on the job.

A ground wire from the generator is first made fast to the metal to be cut. The double conducting hose is then connected to the other lead from the generator and also to the oxygen supply. An electrode is inserted in the holder at the lower end of this hose and the torch is ready for the diver.

The torch itself consists of a carbon electrode containing several tubes through which the oxygen under pressure can pass. This electrode is held in a brass holder which conducts both the electric current and the oxygen into the electrode.

When in position to cut, the diver strikes an arc upon the metal, releases the oxygen jet and the operation starts. The heat of the arc, even under water, is sufficient to melt the metal and the oxygen forced upon this molten metal under pressure tends both to oxidize and to blow the metal out of the cut. This torch can be operated at any divable depth.

Technical Literature

Modern Practice in Tank Protection.

Here is a book containing a fund of valuable information that has never been gathered before on the subject of tank protection through painting. It carries through to a logical degree the modern tendency toward specialization. Its wide scope of usefulness is well indicated by its chapter headings; viz., Acid Tanks, Brine Tanks, Concrete Tanks, Expansion Joints, Oil Storage Tanks, Tank Cars, Tank Steamers, Water Tanks, Principle of Painting Iron and Steel (on tanks and steel surfaces of any kind).

As the preface informs us, modern practice in tank protection embodies a generation of experience in

meeting difficult paint conditions on the part of its publishers, Hill, Hubbell & Co., technical paint specialists, with headquarters in San Francisco. The extent of their reputation is apparent upon leafing through the pages of this handbook. It appears that during the four years of the shipping boom, from 1916 to 1920, they treated the tanks of 544 steamers, including many of Uncle Sam's fighting ships.

The book was written by R. H. Hubbell and deserves credit for subordinating the mercantile aspect of the data to the evident purpose of producing a handbook of genuine helpfulness to editors, busy executives, and technologists interested in "tankology."

HINSCH MULTI-SEAL VALVE

Improved Poppet Valve for Internal Combustion Engines Gives Perfect Seal and Long Life

ALL internal combustion engines, whether of the explosive or of the diesel type, depend on two mechanical features for thermal efficiency and economical performance. One of these features is the seal made by the piston rings against the cylinder wall to prevent the loss of pressure through leakage. The other feature, and the one with which we wish to deal in this article, is the seal made between the valves and their seats in preventing leakage of gas through the head of the cylinders.

It is a rather singular fact that while many inventors have been busy ever since the invention of the internal combustion engine on improvements to piston rings, there has been practically no attempt, up to the present time, in improving the ordinary poppet valve with which the vast majority of internal combustion engines are fitted. In some makes, sleeve valves have been substituted and in others rotary valves, but the ordinary poppet valve, so far as form and material go, has remained the same since the beginning.

Almost universally in internal combustion practice, the exhaust valve fails very much sooner than the intake valve, and it has been a commonly accepted theory that this failure was due to the heat of the exhaust gases and was therefore more or less unavoidable.

Thinking on this problem, A. O. Hinsch, practical motorship operating engineer of San Francisco, began to wonder why the exhaust gas temperatures should have any effect on cast iron, and concluded that there must be some other cause for this condition. Examination of the face of the valve seat and of the valve itself always showed particles of scale sticking to these faces. This scale separates the face of the valve from that of the seat sufficiently so that the flame of combustion is able to find an entrance, and this flame immediately begins to burn the valve faces. The problem, then, for the valve would be to loosen this scale as soon as deposited and to take care of the scale so as to gradually build up a proper seal between the face of the valve seat and the scale itself.

Having reached this conclusion, Mr. Hinsch took one of the valves



A Hinsch multi-seal valve which had been in service for 56 days before being pulled from the engine. One-half of the valve face is shown cleaned so as to bring out the groove construction.

of a motorship in which he was operating and cut several circular grooves in the face of the valve, arranging these grooves in such manner that the upper edge would form practically a chisel, which would hammer loose any scale formation on the valve seat. This valve was put into the engine and operated very satisfactorily for a period of 240 days, whereas the best results obtainable with the ordinary type of valve had formerly been 45 days. This original Hinsch valve is now being used as a sample and is in perfect shape.

On this showing made by the valve, a number have been tried out in motorships with uniform success. One such valve installed in a diesel-electric driven ferryboat on San Francisco Bay was found to be in perfect condition after 3000 running hours. The other valves in the same engine had to be overhauled twice in that period.

In operation, the grooves in these valves become completely filled up with carbon and scale, and when the valve has been in operation some time the entire surface of the valve takes on a false seating face composed of carbon and scale. This false seat gives a cushioning effect as it is held in the slightly flexible grooves which form its anchoring base, and as this face is so heat resistant that it will not burn even in the high temperatures in the center of the combustion flame, it forms an ideal medium for providing a seal against this high temperature combined with the high pressures

in diesel engines. It has also been found to be very satisfactory in gasoline engines for automotive purposes.

An interesting feature of the installation of these valves is that no grinding in is necessary. The valve and the seat having been turned to the same angle, the valve is installed and adjusted for clearance. Owing to the thin cross-sectional area of the narrow seats, they display extreme flexibility as they are heated in operation and quickly find their own true seating in relation to seat face in the cylinder head or valve cage. The following test gives ample proof of this rather novel feature.

A valve of the Hinsch type, after 35 days running, was removed from its cage and placed in the cage which also had been in operation during the same period. A small amount of Prussian blue was spread upon the valve seat and the valve dropped in and turned several times. Examination showed that there was very poor surface contact, and the valve was then placed in operation and after a few minutes became perfectly tight. It was pulled after 20 days' running and was in A-1 condition. This experiment was conducted in a Pacific diesel engine, Werkspoor type, of 850 horsepower, turning 132 r.p.m. and burning heavy boiler oil.

Another important feature of the multi-seal valve is that it can function properly on a seat with a flatter angle. This is greatly desirable for internal combustion engines in that it permits of a slightly later opening of the exhaust valve on account of the full opening being obtained more quickly with the flat angle. This action enables a slightly longer time in each stroke for the pressure action on the piston and so gives greater power output from the same amount of fuel. A flat angle enables also a wider face and more room for grooves, and hence a larger multiplicity of seals.

The multi-seal valve has been patented, and the Multi-Seal Valve Corporation has been formed for the manufacture and sale of this valve to the manufacturers and users of internal combustion engines. Offices have been opened at 202 Balfour Building, San Francisco.

SPERRY "METAL MIKE" IN A NEW FORM

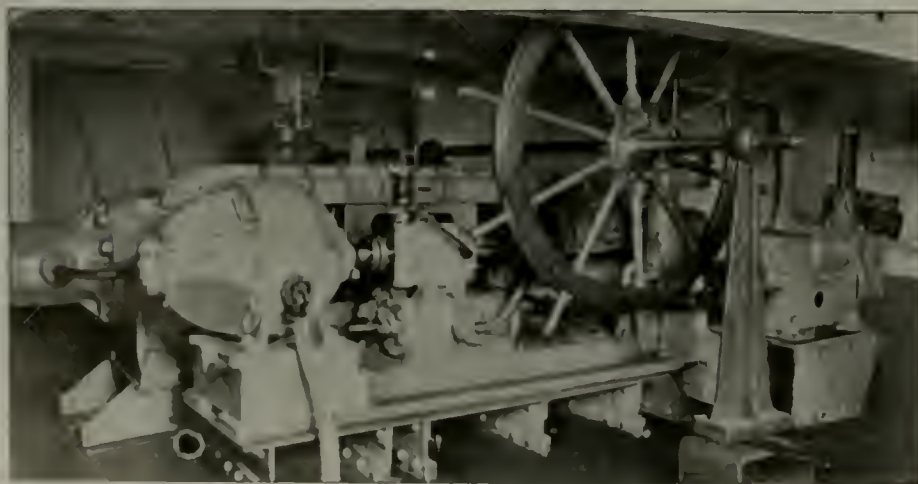
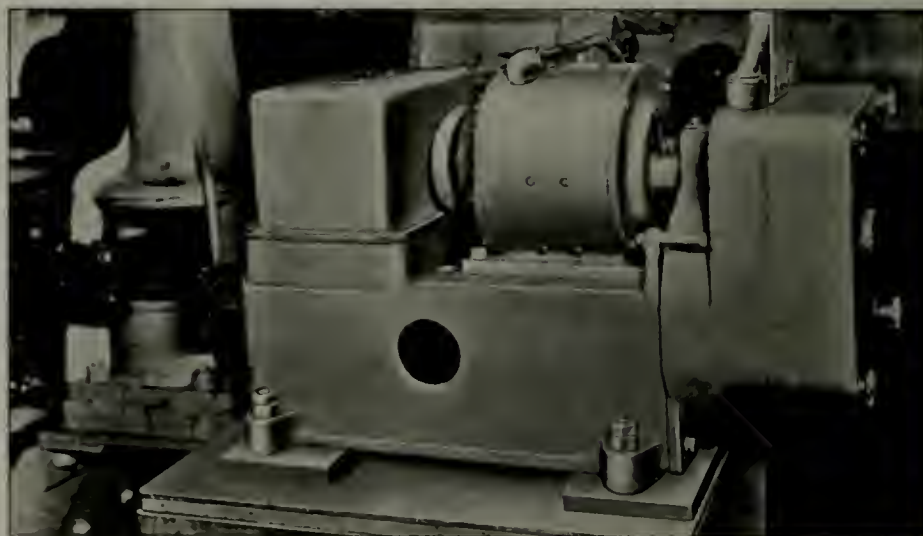
THE Sperry Gyroscope Company and the Hyde Windlass Company have combined to install on the recently converted tanker J. W. Van Dyke a form of gyro-compass control of hydro-electric steering gear which has many advantages over the well known "Metal Mike" as installed in the pilot house. In this installation the gyro-pilot is installed at the hydro-electric steering gear directly over the rudder itself. This pilot is controlled by an electric telemotor which takes its impulses from the gyro-compass in the pilot house, the pilot itself in turn controlling the operation of the electro-hydraulic pump. The telemotor can also be switched to the hand electric control, giving a very delicate adjustment for maneuvering in harbors or for control of the vessel in narrow channels or when passing other ships at sea. The gyro-control of the pilot is, of course, used only for keeping the vessel on a set course at sea, and in this connection it entirely justifies the expense of its installation by the saving in fuel incident to steering a straight course with minimum yaw.

As will be noted in the illustrations, the installation is noteworthy on account of the absence of the large hand steering wheel in the pilot house, hand control of the electro-hydraulic gear being used only in emergencies, with the emergency gear at the steering engine.

The principal advantage of this

new arrangement of gyro-pilot lies in the fact that hand steering from pilot house is effected through direct electrical impulses to the Sperry electrical pilot at the steering engine. These impulses are instantaneous and permit of an infinite range of positional control, making a much more delicate and reliable connection between the pilot house and the steering engine than could be maintained by any mechanical device now in use for that purpose.

The operation of this gear on the J. W. Van Dyke will be observed with considerable interest by marine engineers, as it is thought that it will be the pioneer of a large number of installations of this character.



THE NEW "METAL MIKE"

The upper picture shows the Sperry gyroscopic compass and the electric telemotor stand in the pilot house of the diesel-electric tanker J. W. Van Dyke. Center view shows a close-up of the Sperry pilot which controls the Sperry engine under electric impulses from the gyro-compass or from the hand control. The lower view shows the arrangement of the Hyde electro-hydraulic steering engine as controlled by the Sperry electric pilot.

S. M. C. COMPRESSORS

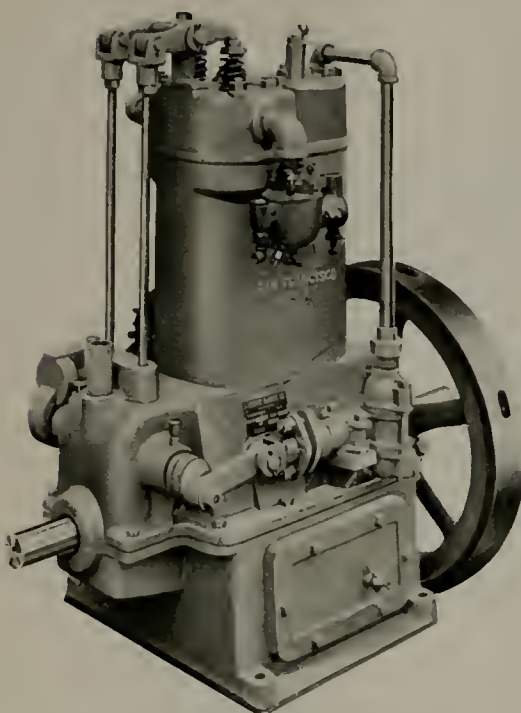
THE problem of producing the large volume of highly compressed air necessary for starting and maneuvering medium sized marine diesel engines presents many difficulties. Little room is available for extra equipment in the smaller vessels. The volume must be obtained quickly; the pressures are higher than those ordinarily needed; the motive power must be instantly available; and simple enough to be operated by inexperienced personnel.

With all of these requisites in mind, the Standard Machine Company of San Francisco have designed, perfected, and are now manufacturing a gas engine air compressor unit known as, Type "A", which is proving highly satisfactory to users of diesel engines.

This unit as shown in the illustration is built with the cylinder of the gas engine and the cylinder of the compressor bored in the same cast iron block, mounted on one crank case, and with both pistons operating on and from the same crankshaft. The engine is of $4\frac{1}{2}$ inches bore and 5 inches stroke, developing five to six horsepower at 600 revolutions a minute. The compressor cylinder is of $3\frac{3}{4}$ inches bore and 5 inches stroke, with a displacement of 20 cubic feet per minute at the working speed of the engine. Both of the pistons are extra long with four rings above the wrist pin and one below, which in case of the compressor piston includes an oil ring to prevent the pumping of crank case oil.

The crankshaft of 2 inches diameter is forged solid with its counterweights and machined from the solid forging. This makes a rigid job, allowing no spring of shaft at any pressure up to the capacity of the engine. The cylinders and heads are thoroughly cooled by circulating water actuated by a bronze plunger pump. Splitdorf magneto ignition with a Schebler carburetor insure reliable operation of the engine.

Every operator of a diesel en-



The S. M. C., Type A, compressor unit manufactured by the Standard Machine Company of San Francisco.

gine knows how important it is to have a reliable supply of starting air at high pressure. On many installations this Standard Type "A" compressor unit has given the initial kick that makes all the difference between an efficient plant and one that tries the soul of the engineer in charge.

The Standard Machine Company are manufacturing also a Type B compressor for use where a compact light unit is desirable for small marine plants up to 70 horsepower. In this unit the two cylinders are cast separately and then mounted on a common crank case.

It comprises a single cylinder, 2-cycle, gasoline engine with $3\frac{3}{4}$ inches cylinder diameter and 4 inches stroke, driving a compressor cylinder of $2\frac{3}{4}$ inches diameter and 4 inches stroke. The compressor is fitted with the finest type of disc valves and will deliver air at 300 pounds pressure. It is tested to 350 pounds pressure.

A sturdy forged steel crank shaft $1\frac{1}{2}$ inches diameter running in generously proportioned nickle babbitt bearings insures maintenance of alignment and high mechanical efficiency in operation.

Specializing in auxiliary compressors for diesel plants, the Standard

Machine Company is able to produce a dependable, reasonably priced unit backed by a modern and complete manufacturing plant.

SEAMLESS METAL HOSE

IN the years since the war, development work has been going forward in the metal hose field, the result of which is a very flexible seamless metal hose made by corrugating either seamless bronze or seamless steel tube. For want of a more descriptive name, this corrugated tube is called hose, but because of the extraordinarily high pressures that it will withstand it really is a flexible pipe.

There are many ways of armoring and reinforcing, and combinations of double structure which allow of subjecting this seamless metal pipe to pressures as high as 10,000 pounds hydrostatic pressure were never dreamed of in the hose field before.

This hose has been put in service in over 700 plants and factories in more than fifty different applications of service over the last six years, with not one failure due to pressure.

Cory engineers have worked out methods of applying fittings of standard design and thread; and, because this hose is all metal, with no interlocked packed joint packed with asbestos string or rubber composition, the high temperatures necessary in the welding or brazing process can be used; and by this method only are the fittings applied to Cory seamless metal hose.

There are many places in every plant where a flexible pipe connection would be very desirable, but because of the high pressure, high temperature, or character of the material to be conducted, ordinary hose could not even be considered. Here is where Cory seamless metal hose fills the need for a flexible hookup capable of withstanding pressures up to 10,000 pounds, temperatures as high as 1000 degrees Fahrenheit, and constant bending, as the service requires.

With types of construction for the entire field wherein ordinary hose is used, Cory seamless hose really begins where ordinary hose leaves off, because of the high pressures and rough usage that it will withstand.

ELECTRICAL EQUIPMENT FOR MOTORSHIPS

ORDERS for electrical marine equipment, including generators, motors, and deck auxiliaries, for two big ocean-going vessels now being finished at the Chester yards of the Sun Shipbuilding & Dry Dock Company, have been received by the Westinghouse Electric & Manufacturing Company. This equipment is to be installed on the motorships East Indian and Gulf of Venezuela.

The East Indian, a 12,000-ton vessel purchased from the United States Shipping Board by Henry Ford, is the first of a fleet of large vessels to be reconditioned by the automobile magnate to handle the export business of the Ford Motor Company. In addition to a general overhauling at the Sun yards, the vessel is being converted into a motorship, the main drive consisting of Sun-Doxford diesel engines of 5400 indicated horsepower. Included in the electrical equipment for this vessel are all the motors required for the operation of the fuel oil and bilge pumps, the lubricating oil, fire, fresh water, general service, and sanitary pumps, as well as the air compressors and the ship's steering gear.

Practically the same type of marine equipment is to be furnished for the motor tankship Gulf of Venezuela, formerly known as the steamship Miskianza. The latter vessel

is a 10,000-ton tanker originally built by the Moore Dry Dock Company of San Francisco. Recently it was purchased by the Gulf Refining Company of Philadelphia, which awarded a contract for the reconditioning of the vessel and its conversion into a motorship to the Sun Shipbuilding & Dry Dock Company.

The main drive, like that on the East Indian, will consist of Sun-Doxford diesel engines of a total of 3000 horsepower, while the two auxiliary generating sets will be driven by Ingersoll-Rand engines, directly coupled to Westinghouse standard generators.

Diesel-Electric Fire Boat

(Continued from Page 464)

The nozzles will be of the Invincible type and will be furnished by the Woodhouse Manufacturing Company.

The construction of this fireboat is well advanced and she will immediately upon completion proceed

to Houston, Texas, where she will be heartily welcomed not only by the underwriters but by the shipowners and operators, as well as those having property on the waterfront in that port.

A Notable Exhibit

THE illustration shows the exhibit of the Federal Telegraph Company at the Pacific Radio Show. On the left is shown the Kolster radio compass. It shows how the rotatable loop is mounted on top of the pilot house or chart room. The hand wheel for rotating the loop is shown mounted just above the binnacle. The receiver proper is located inside the binnacle column. In the corner to the left may be seen the battery box. The head phones for the use of the navigator

are also kept in the base of the binnacle. By wearing these head phones the navigator rotates the loop and obtains his true bearing by listening and watching the compass card for the point where the radio signal entirely fades out. The Kolster radio compass is one of the greatest aids to navigation ever invented.

In the middle background may be seen a high speed automatic receiver such as is now in use throughout the Federal Telegraph Company point-to-point radio telegraph system on the Pacific Coast.

At the extreme right may be seen a model ship board installation. This installation is comprised of a Federal $\frac{3}{4}$ kilowatt marine spark transmitter, a Federal CW marine arc transmitter, the 2 kilowatt Federal arc, the marine receiver, the cooling water installation tank, and the circulating pump.

In the foreground may be seen some of the types of high frequency insulators used in antenna construction work at Federal stations and stations built for the United States Navy by the Federal Telegraph Co.



MARINE INSURANCE

DEVELOPMENTS OF THE MONTH

By CHARLES F. HOWELL, Contributing Editor

LAST month we took occasion to point out the unfairness to underwriters in the lax methods observed by many of the insured in the matter of reporting shipments under their open policies. The subject has been freely discussed since then by interested parties, and attention directed to still another source of possible loss to the insuring companies along the same line. It has to do with the matter of duty. Duty as well as merchandise is covered in most import policies. In certain types of loss, such as theft and pilferage, recovery may be had from the government of the amount of duty represented by the missing goods. But this recovery is not made by the company under subrogation, but by the assured themselves or by the custom house broker who represents the assured, they having already paid the loss on duty to the assured.

There is generally a very considerable delay in the duty refund from the government, on account of the usual red tape, and months sometimes pass before the assured receives his remittance. Indeed, the elapsed time is sometimes of so great length that the assured forgets that the amount refunded is to be turned over to the underwriters, and when the money finally comes in it is entered up as profit on the assured's books. Change of clerks in the assured's office is often responsible for this oversight, the successor not having been properly instructed in such matters. There have been instances where the refund has been made to the custom house broker as attorney for the assured and the payment been confused in the latter's books and entirely lost sight of so far as the insurers are concerned.

It is being more and more felt by underwriters that they will have to do something to remedy such a con-



The tug Humboldt on Humboldt Bar.

dition. Doubtless they may be expected to keep a closer watch upon duty refunds. This will probably necessitate some sort of audit system being introduced, month by month; but it will be worth while to them.

Extends Theft Act

President Coolidge has affixed his signature to a bill, enacted by both branches of Congress, which amends the Carlin Act (27 Stats. 670) by extending the act's provisions to thefts from wagons, trucks, automobiles, and other vehicles employed in connection with shipments moving in interstate commerce.

By this means a theft of express matter from wagons and trucks of an express company is brought within the scope of the new statute. Station houses, depots, platforms, etc., are defined as including private stations and loading platforms of persons, corporations, etc., having

custody of freight, express, and baggage moving in interstate commerce. The way-bill covering shipments is prima facie evidence as to their interstate character. (S. Rept. No. 389.)

Representative Dyer of Missouri introduced the bill. It amends the act entitled "An Act to punish the unlawful breaking of seals of railroad cars containing interstate or foreign shipments, the unlawful entering of such cars, the stealing of freight and express packages or articles in process of transportation in interstate shipment, and the felonious transportation of such freight or express packages or baggage or articles therefrom into another district of the United States, and the felonious possession or reception of the same."

Japanese Conditions Improving

Normality has been practically restored at the ports of Yokohama and Tokyo, and most of the insurance companies are cancelling the restrictive clauses that apply to shipments for that destination. Shanghai and Hongkong remain in an unsettled state, as the shipping strikes are still prevailing, and a very considerable part of cargo for those ports is being discharged and temporarily held at Manila and Kobe.

Labelling Merchandise

It is always of interest to know what other nationalities are thinking and saying about matters which also concern us. Thus, when the four Scandinavian nations, at the recent Northern Marine Insurance Congress held at Gothenburg, took up the subject of labelling goods they made some excellent points. The shipper, it was pointed out, can demand that the bill of lading contain particulars of the labelling of goods, the number, size and weight, and apparent condition. It was regarded as naturally unlikely that the

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shipowner would include in the bill of lading information of such a nature about which there is any doubt. The bill of lading is prima facie evidence of goods having been received in the condition described in that document. According to theory the shipowner can be held accountable for the correctness of the information in the bill of lading, but in actual practice he frequently escapes a material part of the responsibility by including a note reading, "Size, weight, and quality unknown." But, even so, he can still be held for the number of the packages. The delegates urged that legal rules for bills of lading be made internationally uniform, in view of the importance of the document in trade and the world-wide extent of its use.

The Scandinavian conference then moved and adopted the following resolution: "This congress recommends that the Scandinavian countries as soon as possible carry through definite rules for shipowner's liability for loss of or damage to goods which he transports, and further recommends that such rules to the greatest possible extent be made to correspond to the rules adopted by the International Shipping Conference at Brussels and already carried out in practice in England."

Warehousing Hazards

The courts have recently held that warehousing at a transshipment point involves hazards to goods which relieve the ocean carrier of liability with respect to proof of good order and condition when the merchandise was delivered to the steamship company. This was held in the case of the *Shawmut*, reported in 1925 A. M. C. 126. It is of importance because of the element as to the presumption of good condition.

In this case a shipper undertook to send six cases of narcotics from Washington, D. C., to Hamburg,

Germany. The shipment went forward by rail to New York, where the shipper took them over and placed them in a warehouse for two days and then transshipped them to a steamer of the Shawmut Steamship Line for delivery to Hamburg. It was discovered, later on, that the narcotics had been removed at some point between Washington and Hamburg, and stones to an equal weight substituted for the drugs. Suit was brought by the shipper to recover from the steamship company on account of the pilferage.

The court held that under the circumstances proof of the good order and condition of the goods when delivered to the railroad at Washington was not sufficient, and that there was no liability on the part of the defendant steamship company unless the plaintiff showed that the merchandise was in boxes in good order when delivered to the defendant at New York.

The main point is this: Where goods are delivered to a carrier well packed and in good order the presumption is that they have continued in that condition during transit and until delivery to the final carrier, unless the contrary is established. But should the goods, subsequent to delivery to the initial carrier, be redelivered to the shipper and warehoused at the transshipment point and then turned over to the ocean carrier for transportation, there is no presumption that the original good condition continued or existed at the time of delivery to the final carrier.

Right to Deviate

Deviation is a perennial subject with marine underwriters, and many a legal and controversial battle has been waged over it. The latest court angle has been supplied by Justice Murphy of the Supreme Court of Vancouver, who ruled that where a bill of lading gives the right to de-

viate, this right must be exercised for some purpose within the terms of the charter.

The circumstances of the case were as follows: The Canadian Exporter, owned by the Dominion government, issued a bill of lading for a cargo of lumber from Vancouver to Yokohama which, in common form, gave the right to deviate. The vessel was wrecked in Willapa Bay, off the mouth of the Columbia River, while trying to make the port of Portland. The Western Assurance paid insurance on the lumber in a total amount of \$46,000, but sued to recover it from the Canadian Government Merchant Marine on several grounds, one of which was unwarranted deviation. The Vancouver Supreme Court ruled against the plaintiff on all the issues of fact, and on the legal question, respecting deviation, as well. An appeal will probably be taken.

On the question of deviation the court said: "The bill of lading authorized the deviation to Portland. The object of the deviation clause was to enable the ship to complete her cargo at ports within reasonable distance. Such deviation might be the only way in which such service could be obtained at the agreed rate of freight."

The doctrine of deviation, as understood in the United States, is an implied condition that there shall be no departure from, or variation of the insured voyage after the risk has attached. In order to excuse certain forms of deviation so that the insurance may not be suspended or automatically terminated, the basic policy contains the words, "And it shall and may be lawful for the said vessel, in her voyage, to proceed and sail to, touch and stay at, any ports or places, if thereunto obliged by stress of weather, or other unavoidable accident, without prejudice to this insurance." Of

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course, this exception to the rule of deviation is made as a practical matter and as an inducement to the captain of a vessel to exercise every care to maintain the safety of the venture. But the facts in any given case must show the necessity for the deviation, as otherwise this clause might be made to cover a multitude of sins. As a general principle, any deviation voids the insurance. The only other excusable deviation, in addition to that named above as of the printed form, is when it is made to save life. It may be added that hull policies ordinarily permit deviation when made to save property; but this is questionable ground. The extent of the deviation, or the further consideration that it did not enhance the risk, has no weight in deciding whether or not a breach has been committed.

A moment's reflection on these points will be sufficient to show how hard is the position of the innocent cargo owner, who is without voice in the management of the vessel. For his protection it is customary to insert in cargo policies the so-called "deviation clause," which holds the assured covered in the event of deviation or change of voyage, the assured agreeing to notify the underwriters as soon as knowledge of the deviation is brought to his attention, and to pay such additional premium as may be required. However, if another vessel is substituted this clause ordinarily does not extend protection.

It is also of interest to bear in mind that as deviation, in the case of time hull insurance, would automatically void the policy for the remainder of the policy term, a deviation clause, similar to that in cargo policies, is inserted, or it is provided that in the event of deviation the underwriters shall not be liable for loss occurring while the vessel is out of the policy limits.

While on this subject it may be well to remind our readers that an opportunity to save imperiled property in still another emergency is taken care of by the express granting of liberty for a vessel to proceed to an open port, in the event of blockade, and there end the voyage. Such a deviation, however, must be a reasonable one, the assured not being given latitude under the clause to substitute an entirely new voyage.

Canada in Rebellious Mood

The bold statement is being made by Canadian newspapers that a system of state insurance is practically certain in Canada next year unless the British Imperial Shipping Committee enforces marine insurance rates that will remove what are described as "existing discriminations" against the St. Lawrence route. Both St. John and Prince Rupert, the one in New Brunswick and the other in British Columbia, have been recommended by the committee for exemption from the differential insurance rate applying to Canadian ports. Similar consideration had already been made for Halifax. But the St. Lawrence ports remain on the list of the discountenanced, the committee having suggested a special inquiry into conditions on the river before existing discriminations in favor of United States ports are removed. The Montreal and Quebec rate is still 25 cents, as against 12½ cents per hundred on the same shipments from Portland, Boston, and New York. The committee wants to know more about the 111 strandings on the St. Lawrence route, referred to in its report. It will certainly be hard for the Canadians to argue away the unquestionable perils of fog and ice so general on the St. Lawrence at many seasons of the year.

Overloading No Sea Peril

Where overloading is proved to have been the cause of a loss there

is no liability on the part of the underwriters. Such was the recent decision of the United States court in the Western District of the State of Washington in the case of the Olympia Canning Company, Ltd., vs. the Union Marine Insurance Company, Ltd., 1925 A. M. C. 873. The circumstances were as follows: The canning company shipped a quantity of canned goods by the steamer Rubaiyat from Olympia for Seattle. At Tacoma a stop was made and additional cargo taken aboard and stowed improperly, making the ship topheavy. Shortly after leaving Tacoma she capsized and sank, the cargo becoming a total loss. And this in spite of the fact that the weather was fair and the sea perfectly calm.

The language of the court is worth remembering: "If the vessel had sunk at the dock by reason of overloading, or improper loading . . . it could not be seriously contended that the sinking was because of a peril of the sea. G. P. Booth, 171 U. S. 450. The loading being of such a character that within 'a few minutes' after leaving the dock she sank in a calm sea, the weather being fair, by reason of the tender condition occasioned by the improper loading, the same result follows. The policy in issue is the ordinary marine policy and 'the court must find something in the nature of a marine peril' before recovery may be had, and from admitted facts this cannot be done. The phrase 'all other perils,' etc., in the policy must refer to the 'perils of the seas' and be held to have no effect, since there is no doubt as to the 'specific causes of loss.' Anthony vs. Aetna Insurance Company, Fed. Cas. No. 486."

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Freights, Charters, Sales

September 16, 1925.

SINCE our last report to you dated August 18, the following fixtures have been reported for wheat to the United Kingdom and Continent: two steamers, 33/-, one for Nov. loading and the other for Jan. loading by Heatley & Co.; British stmr. Kingswood, 33/6, Dec./Jan., Wm. H. Pymm, Jr.; British stmr. Ethelwolf, 33/-, Strauss & Co.; British stmr. Carlton, 32/-, Sept., Bunge Western Grain Corp.

The following fixtures are reported for grain to the Orient: Japanese stmr. Ryuoh Maru, Portland to Japan, grain, Sept. loading, charterers and rate not mentioned; Japanese stmr. Fukuyo Maru, North Pacific to Shanghai, wheat, Dec. loading, \$4.50; Japanese stmr. Yomei Maru, same, \$4.50, Oct.; Japanese stmr. Yogen Maru, British Columbia to Orient, grain, Dec.

The following steamers are reported fixed with lumber to Australia: British stmr. Orient City, Sept., W. L. Comyn & Co.; Greek stmr. Dionyssios Stathatos, 4/6, Sept., W. L. Comyn & Co.; British stmr. Kafiristan, Sept., J. J. Moore & Co.; Japanese stmr. Saka Maru, Oct., same charterers; British stmr. Queen Maud, \$13, Oct./Nov., same charterers; British stmr. Peebles, Oct. loading, \$13.25.

The following Japanese stmr.s are reported fixed with lumber to the Orient: Hokkai Maru, lump sum \$29,000, Sept., charterers not mentioned; Florida Maru, by National Commercial Corp.; Milan Maru, Sept./Oct., Nakagawa & Co.; Clyde Maru, Sept.

The American bktn. Forest Dream has been purchased by charterers for a trip with lumber from British Columbia to Port Louis, Mauritius Island (South Africa).

For lumber to the Atlantic Seaboard the following steamers are reported: American stmr. Nebraskan, Sept., Babcock Angel Lumber Co.; American stmr. Orient, \$15, Sept./Oct.; American stmr. Orinoco, same; Pan m. s. Aneiura, North Pacific to Cuba, \$16, Sept, Parks &

Lawton; American stmr. Missoula, Oct., Thos. I. Parks Lumber Co., New York; American stmr. West Katan, \$14.50, Oct., charterers not mentioned; British stmr. Berwindmoor, \$14, Sept./Oct., Nettleton Lumber Co.; American stmr. Onondaga, Oct. loading, charterers not mentioned.

The Japanese stmr. Hurohime Maru is reported fixed with creosoted ties from Columbia River and British Columbia to Calcutta.

The following steamers are reported taken on time charter: British stmr. Shannonmede, Vancouver, B. C., to North of Hatteras, 85 cents, one round trip (delivery and redelivery North of Hatteras), prompt; Norwegian stmr. Rigi, north Pacific to Sydney, lumber, by W. L. Comyn & Co., Oct. loading, trip down 4/; Norwegian stmr. Capto, 3 round trips intercoastal, by South Alberta Lumber Co.; Swedish m. s. Sveajarl, 7 to 8 months, Pacific trade, 5/, delivery and redelivery United Kingdom, prompt; British stmr. Sheaf Mount, British Columbia to Atlantic, redelivery Australia, Oct., 92½ cents; British stmr. Corinthic, intercoastal trade, one round trip, delivery U. S. Atlantic, 87½ cents, Sept.

The following sales have been reported: Norwegian m. s. Beulah, Norwegian parties to O'Connor, Harrison & Co.; American bktn. Jane L. Stanford, \$1200 (fishing barge), Robt. Dollar Co. to Los Angeles parties; American stmr. West Keats, U. S. Shipping Board to California & Eastern S. S. Co.; American bktn. Olympic (to be converted to fishing barge), Thos. Crowley to Craig & Bruns, Long Beach, Calif.; American schr. Llewelyn J. Morse (to be dismantled), Jos. Markewitz to Allen Knight; American bktn. Echo, H. P. Purdie to Allen Knight; American bktn. Forest Dream, Grays Harbor Motorship Corp. to Imported Hardwoods, Ltd.; American stmr. El Capitan, J. M. Botts to Alaska steamship Co. of Seattle.

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REPAIR AWARDS

The Shipping Board on September 11 awarded two contracts to Moore Dry Dock Company for repairs and alterations to the West Carmona and West Sequana and to Hanlon Drydock and Shipbuilding Company, Oakland, for repairs and alterations, including installation of cofferdam to the West Ivan, operated out of San Francisco and Los Angeles to the Far East by Struthers & Barry. The bid submitted by Moore's for the work was \$6213 on each job, and by Hanlon, \$6794.

AMERICAN SHIPBUILDING

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON



Freight Steamship El Coston

The Robin Dry Dock and Repair Company, Brooklyn, New York, has just completed the reconditioning and conversion to a freight vessel of the steamship El Coston, formerly the Bienville. The steamship Bienville was built for the Southern Pacific Company at Todd Dry Dock & Construction Company, Tacoma, Washington, last year. On March 19 of this year while on her second voyage between New York and New Orleans she caught fire while at the latter port and her entire superstructure and passenger accommodations were destroyed.

The Todd Shipyards Corporation was the successful bidder for this work. Temporary repairs were made to the vessel's hull and to such of the machinery affected by the fire, new steering control system and communicating system between bridge and the engine room were installed, and the vessel was moved to the Robins plant at Brooklyn.

Her lower-most passenger deck was removed and completely rebuilt, both smoke stacks, fiddley, engine and boiler casings were entirely removed and rebuilt. The mainmast was also removed and rebuilt, as the heat had buckled it considerably. The steerage and crew's quarters below weather deck were completely removed, together with the steel bulkheads which enclosed them. New cargo ports were fitted and some of the existing ones were relocated to suit new conditions.

The forward end of the bridge deck enclosure was fitted up to carry cargo. In the after end of this space the engineers, firemen, oilers, water tenders, and cook's quarters were constructed, as well as a mess room for the captain, officers, and

firemen. The galley and ship's provision chambers adjoin these quarters, the entire layout affording spacious and convenient quarters. The captain's and officers' quarters, pilot house, chart room, navigating bridge, hospital, and radio room are constructed above the bridge deck space.

LIFEBOATS FOR THE MALOLO

One of the largest orders for lifeboats ever placed for a vessel built on this side of the Atlantic has been secured by the New York Shipbuilding Corporation of Camden, New Jersey. The boats are for the steamship Malolo, which is being constructed by Wm. Cramp & Sons Ship & Engine Building Company for the Matson Navigation Company, under the supervision of Gibbs Brothers, Inc.

The order calls for twenty boats in all—sixteen 28-foot steel lifeboats; two 20-foot wooden workboats, which will be equipped to rate as lifeboats; and two 30-foot steel motorboats, equipped with radio and powerful enough to tow the non-motorized craft.

The two motorboats will be divided by water-tight steel bulkheads into three compartments. There will be copper air tanks to keep them afloat when loaded with full equipment and ten passengers. They will be driven by sixteen 28-horsepower heavy duty gasoline engines and they will be lighted by electric current drawn from the radio storage battery.

The radio apparatus will consist of a 12-kilowatt transmitting set capable of adjustment for transmission on a 600 meter wave length, and a receiving set which will be

able to handle incoming messages on any wave length from 200 to 4000 meters. The radio battery will be charged from a 1000 watt generator. The masts for the antennae will have an elevation of 28 feet and a spread of 24 feet.

Work in Prospect

One of the most live prospects for American shipyards at the present time is the construction of a passenger and freight steamer for the Inter-Island Steam Navigation Company, Honolulu. Gibbs Brothers of New York will design the steamer, and William Gibbs is now in Honolulu with a view to personally inspecting the route on which this vessel is to be used. The vessel will be about 285 feet long, with 46 feet beam and will have accommodations for 200 passengers. It will be designed for tourist travel between Honolulu and Ahukini, Kauai, this island being considered the greatest beauty spot of the Hawaiian group and a great attraction for tourists. Ferd Hons, vice-president of the company, is the member of the firm most actively interested in the new ship.

The Golden Gate Ferry Company, San Francisco, has secured franchises from the city of San Francisco and the city of Berkeley to operate a passenger and automobile ferry service between the two cities over a four-mile route. Authority has been asked from the State Railroad Commission to operate this service. If this authority is given it is quite probable that the ferry company will order at least two new ferryboats similar to the diesel-electric ferries Golden West and Golden Gate, which they now operate between San Francisco and Sausalito.

Joseph Supple of Supple Tug & Barge Company, Portland, Oregon, plans to build a 65-foot diesel tug. The craft will be used in towing work on the Columbia river.

McCauley, Hibbs & Smith, naval architects and marine engineers and surveyors, San Francisco, are still working on the specifications for two new ferryboats for the Key System Transit Company, San Francisco.

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**SHIP REPAIRING
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Recent Contracts

J. C. Johnson, Port Blakely, Wash., has an order for a barge for the Anderson Towboat Co., Seattle, 110 feet long, 36 beam, and 11 feet 4 inches draft. Mr. Johnson is also building two barges for stock.

The American Ship Building Company, Cleveland, Ohio, will build at their Lorain plant two bulk freighters for Pickands, Mather & Co. The freighters will be propelled by triple expansion engines developing 2200 indicated horsepower. They will be 580 feet between perpendiculars, 60 feet beam, and 20 feet loaded draft, and of 12,000 tons deadweight.

Great Lakes Engineering Works, River Rouge, Michigan, has an order from the Walkerville & Detroit Ferry Co. for an automobile and passenger ferryboat to be 128 feet between perpendiculars, 45 feet beam, and 12 feet loaded draft. The boat will be propelled by compound engines of 900 horsepower and will have a speed of 12 miles.

Marietta Manufacturing Co., Point Pleasant, W. Va., have an order for six barges for the Indiana-Belfort Transportation Company. They also have an order for a diesel engined sternwheel vessel for the same company, the latter to be equipped with Fairbanks-Morse engines.

Midland Barge Company, Midland, Penn., has orders for a barge for the Standard Sand & Gravel Co.; a dredge and a derrick boat for the Alleghany River Sand Co.; and a hopper float for E. T. Slider.

New York Shipbuilding Corp. has an order for a dredge hull for the American Dredging Co.

Sun Shipbuilding Company has contract for a tug for the Pennsylvania Railroad.

Chas. Ward Engineering Works

has an order for six steel barges for the Kelly Axe & Tool Co.

Bethlehem Shipbuilding Corp., Ltd., Baltimore Dry Dock Works, has an order for two dredge hulls for the Ellicott Machine Corporation, 160 feet long and 40 feet wide.

Keel-layings

Diesel-electric tank barge for the General Petroleum Corp. by Bethlehem Shipbuilding Corp., San Francisco, on Aug. 24.

Barge for stock by J. C. Johnson, Port Blakely, Sept. 10.

Six barges for Indiana-Belfort Transportation Co., by Marietta Manufacturing Co., Aug. 15.

Harbor tugboat for Pennsylvania Railroad by Newport News Shipbuilding Co., Aug. 20.

Six carfloats for Pennsylvania Railroad by Sun Shipbuilding Co., July 27, Aug. 3, 10, 17, 31, and Sept. 7; tug for same company Sept. 14.

Deck barge by Nashville Bridge Co., Sept. 16.

Launchings

Gleneagles, freighter for Great Lakes Trans. Co. by Midland Shipbuilding Co., Midland, Ontario, Aug. 26.

U. S. Chicot, towboat to U. S. Army Engineers by Howard Ship Yards & Dock Co., Aug. 13.

Deliveries

Barge to Drummond Lighterage Co., Seattle, by J. C. Johnson's Shipyard, July 3.

Towboat to Carnegie Steel Co. by American Bridge Co., Aug. 7; three barges to U. S. Army Engineers Sept. 2.

Self-unloading stone carrier to Bradley Transp. Co. by American Ship Building Co., Aug. 1.

Ahyee, schooner yacht, to Dave Morris by Bath Iron Works, July 23; Acushia II, schooner yacht, to

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IN ATLANTIC COAST SHIPYARDS

SHIP REPAIRING SHIP BUILDING RECONDITIONING ENGINE REPAIRS

G. M. Hecksher, Aug. 3; Seafarer, schooner yacht, to Parker Corning, Aug. 8; Charmian, schooner yacht, to Newcomb Carlton, Aug. 15; Shearwater, schooner yacht, to F. L. Crocker, Aug. 20; Calliope, schooner yacht, to Julius Fleishman, Aug. 17; Helena II, express cruiser, to Chas. E. F. McCann, Aug. 21.

Seminole, combination steamer to Clyde Steamship Co., by Newport News Shipbuilding & Drydock Co., Aug. 10; barge for Army Engineers, Aug. 12; three barges to Arundel Corp., Aug. 17.

John A. Lynch and Henry Bruckner, ferryboats, to City of New York, by Staten Island Shipbuilding Co., July 9 and Aug. 7.

Murray Hulbert, Edward Reigelman Julius Miller, ferryboats, to City of New York, by Tebo Yacht Basin, July 9, Aug. 7 and 21.

Union, sternwheel towboat to the Union Sand & Gravel Co., Huntington, W. Va., by Howard Ship Yards & Dock Co., July 30.

North Star, twin screw tunnel type towboat by Nashville Bridge Co., Sept. 16.

Barge to Arundel Corp. by Newport News Shipbuilding & Drydock Co., Aug. 17.

York, steel hull ferry to Gloucester & Yorktown Ferry Co. by Spedden Shipbuilding Co., Sept. 4.

Shipyard News

Plans are being prepared by the Harbor Construction Company, San Pedro, for the erection of a two-story reinforced concrete ware-

house on the Hammond Lumber Company's property at Terminal Island for Garbutt & Walsh, boat builders.

* * *

The Winslow Marine Railway, Eagle Harbor, Washington, is building a 116-foot motor yacht for Captain James Griffiths of Seattle. The yacht will be called the Sueja II and has been designed by L. E. Geary of Seattle. She will have a beam of 19 feet and draft of 7 feet 6 inches. Propulsion motor will consist of two 6-cylinder, 180 horsepower Washington-Estep diesel engines. Auxiliary power will be supplied by a small oil engine driving an auxiliary compressor and auxiliary generator. All auxiliaries will be electrically driven. The motor yacht is designed for long ocean cruises and will be furnished to attain the greatest possible cruising comfort for the owner and his guests.

* * *

The Marine Construction Company, Seattle, is now working on five barges. One of these, for the Chicago, Milwaukee & St. Paul Railroad, will be 210 feet long, 43 feet beam, and 12 feet depth.

* * *

About the time this book goes to press the Bath Iron Works, Ltd., Bath, Maine, will be auctioned for the account of the receivers. The yard is working on a large order of schooner yachts and cruisers for New York brokers but did not have sufficient capital to carry on the work. The receivers have been authorized to refuse any bid less than \$90,000.

* * *

Keel has been laid by the N. J. Blanchard Boat Building Company, Seattle, for a 62-foot cruiser for Mrs. A. K. Eskridge of Los Angeles. The cruiser will be propelled by two heavy duty 6-cylinder 100-horsepower gasoline engines, which will give a speed of about twelve knots.

* * *

Two steamship lines operating in the Atlantic coastwise trade have asked for bids for the construction of passenger and freight vessels for this service.

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Ericsson Line of Philadelphia, Mr. McDonald, president. Two steel vessels will be built, 245 feet long, 47 feet beam, with speed of 15 knots. Accommodations are to be provided for 200 over-night passengers, and for 1500 under special circumstances.

The other company which has called for bids is the Eastern Steamship Lines; Theodore Ferris of New York is the architect. This company will build two first-class high speed passenger vessels.

The City of New York, Department of Plant and Structures, is planning the construction of a ferryboat for the Staten Island ferry, to be 264 feet over-all, 66 feet beam, to be powered with two compound reciprocating engines.

William Muller, Wilmington, California, besides having under construction the two large seagoing towboats for the Wilmington Transportation Company, recently laid the keel of a 110-foot schooner yacht for William L. Valentine. The yacht was designed by William Gardner.

The St. Helens Shipbuilding Company, Portland, Oregon, was low bidder on September 17 for the construction of a new lighthouse tender to be used on the Columbia River. The bid was \$23,430.

The Navy Department asked for bids to be submitted to the Mare Island Navy Yard for the seven destroyers which were wrecked at Honda Point in August of 1924. The destroyers were built at San Francisco during 1918-19 at a cost of one million dollars each. They are the Woodbury, Lee, Nicholas, Young, Fuller, Delphy, and Chauncey.

It is reported that a pumping plant equivalent to the municipal waterworks of a city of nearly two million population will be installed on the steamship Malolo. In exact figures, the Malolo's pumps will have a capacity of 33,615 gallons per minute, or 48,405,000 gallons per day.

Eighty-eight pieces of lignum vitae, weighing in the aggregate of half a ton, will be used for the bushings of the four stern tubes. The after section of the stern tubes will be 14 feet 6 inches long and will weigh 7½ tons each. The forward stern tubes will be 13 feet 11½ inches in length and will weigh over five tons each.



Above is a photograph of the recently completed steamer Cherokee, which, together with her sister ship the Seminole, was recently completed by the Newport News Shipbuilding & Drydock Company for the Clyde Steamship Company. These two vessels were built for the Atlantic coastwise passenger and freight trade. They are 387 feet 6 inches between perpendiculars, 31 feet 6 inches depth; they are equipped with Newport News-Curtis engines of 4200 shaft horsepower and attain a speed of 14½ miles. The vessels are very comfortably and beautifully equipped and are greatly in advance of any vessels yet built for the Atlantic coastwise service.

Progress of Construction

Pacific Coast

BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT Potrero Works

Purchasing Agent: O. W. Streett.
No name, hull 5327, diesel-electric tank barge for General Petroleum Corp.; 170 L.B.P.; 32 beam; 11-6 loaded draft; 9 mi. loaded speed; 920 D.W.T.; 2 Atlas-Imperial diesel engs, 250 H.H.P. ea; keel Aug24/25.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

Barge, 100x36 feet; for Drummond Lighterage Co., Seattle; keel June8/25; launched June28/25; delivered July3/25.

No name, hull 44, barge for stock, 100 L.O.A.; 36 beam; 9-6 draft; keel Sept10/25; launch Oct10/25, est.

No name, hull 45, same as above; keel Sept 30/25, est; deliver Oct30/25, est.

No name, hull 46, barge for Anderson Towboat Co., Seattle; 110 L.O.A.; 36 beam; 11-4 draft; keel Sept14/25, est; deliver Oct15/25, est.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION San Pedro, Calif.

Purchasing Agent: L. A. Hanson.
No name, hull 47, straight stem and elliptical stern, one deck, fireboat, for Los Angeles Fire Department; 93 ft 4 in L.B.P.; 19 ft beam; 6 ft 6 in loaded draft; 17 mi speed; 900 SHP; Winton gas engs; keel June26/25; launch Sept19/25, est; deliver Oct1/25, est.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460 L.B.P.; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 HHP; two WT express type boilers; 10,000 tons disp; keel April21 deliver April 26, est.

ROBERTSON'S SHIPYARD Alameda, Calif.

No name, towboat, San Francisco Bridge Co.; 50 L.H.P.; 15 beam; 5 draft; 100 HHP Union diesel eng; keel May4/25; deliver July1/25, est.
Barge, 60x26x6 ft; keel Apr27/25.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
One towboat, Carnegie Steel Co.; 170x39x6 1½, delivered Aug7/25.
Three deck barges, U. S. Engineers, Pittsburgh, 12x32x8, delivered Sept2/25.
Four barges, U. S. Engineers; 80x26x5.
Three barges, for Patton Tully; 160x34x7 ft; deliver Nov 25, est.
Two barges for the Standard Oil Co. (La.); 275x2x9, deliver Sept 25, est.

Thirty barges for the Ohio River Co.; 175x26x11; 7 delivered.

Twelve barges, Crucible Steel Co.; 175x26x11; deliver Jan1/26, est.

Twelve barges, T. C. I. & Ry. Co.; 140x25x9; deliver Jan/26, est.

THE AMERICAN SHIP BUILDING COMPANY Lorain, Ohio

W. H. Gerhauser, vice-president and director of purchases.

No name, hull 790, self-unloading stone carrier, Bradley Transportation Co.; 566 LBP; 60 beam; 20 draft; 10,800 DWT; turbo-electric propulsion; 3000 SHP; General Electric motors; Foster boilers; delivered Aug1/25.

No name, hull 791, bulk freighter, Pickands, Mather & Co.; 580 L.B.P.; 60 beam; 20 loaded draft; 13 mi. speed; 12,000 D.W.T.; 2200 I.H.P. trip, exp. engs.; 3 B. & W. boilers.

No name, hull 792, sister to above.

BATH IRON WORKS, LTD Bath, Maine

Purchasing Agent: J. L. P. Burke.

Ahyce, hull 109, schooner yacht, for Dave H. Morris; 58 L.O.A.; 12 beam; 7-6 draft; Kermath eng; keel Mar20/25; launched July16/25; delivered July23/25.

Aeushia II, hull 110, schooner yacht, for G. M. Hecksher; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr8/25; launched July30/25; delivered Aug3/25.

Seafarer, hull 111, schooner yacht, for Parker Corning; 58 L.O.A.; 12 beam; 7-6 draft; Karmath eng; keel Apr21/25; launched Aug4/25; delivered Aug8/25.

Charmian, hull 112, schooner yacht, for Newcomb Carlton; 58 L.O.A.; 12 beam; 7-6 draft; keel Apr23/25; launched Aug7/25; delivered Aug15/25.

Shearwater, hull 112, schooner yacht, for F. L. Crocker; 58 L.O.A.; 12 beam; 7-6 draft; Scripps eng; keel Apr27/25; launched Aug11/25; delivered Aug20/25.

Calliope, hull 114, schooner yacht, for Julius Fleishman, same as above; keel May1/25; launched and delivered Aug17/25.

Helena II, hull 116, express cruiser, Chas. E. F. McCann; 65 ft over-all; 11 ft beam; 3 ft draft; 2 Sterling gas engs, 278 HHP each; keel May5/25; launched and delivered Aug21/25.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N.

BETHLEHEM SHIPBUILDING CORP., LTD., BALTIMORE DRY DOCKS WORKS Baltimore, Md.

Hull 6132, dredge hull, Elliott Machine Corp., 160 feet long; 40 feet wide.
Hull 6133, same as above.



S. S. City of Los Angeles backed by B & W dependability.

This palatial Steamship, Flagship of the Los Angeles-Hawaii Service of the Los Angeles Steamship Co., is operating on express schedule with Babcock & Wilcox steam generating equipment, demonstrating absolute dependability.

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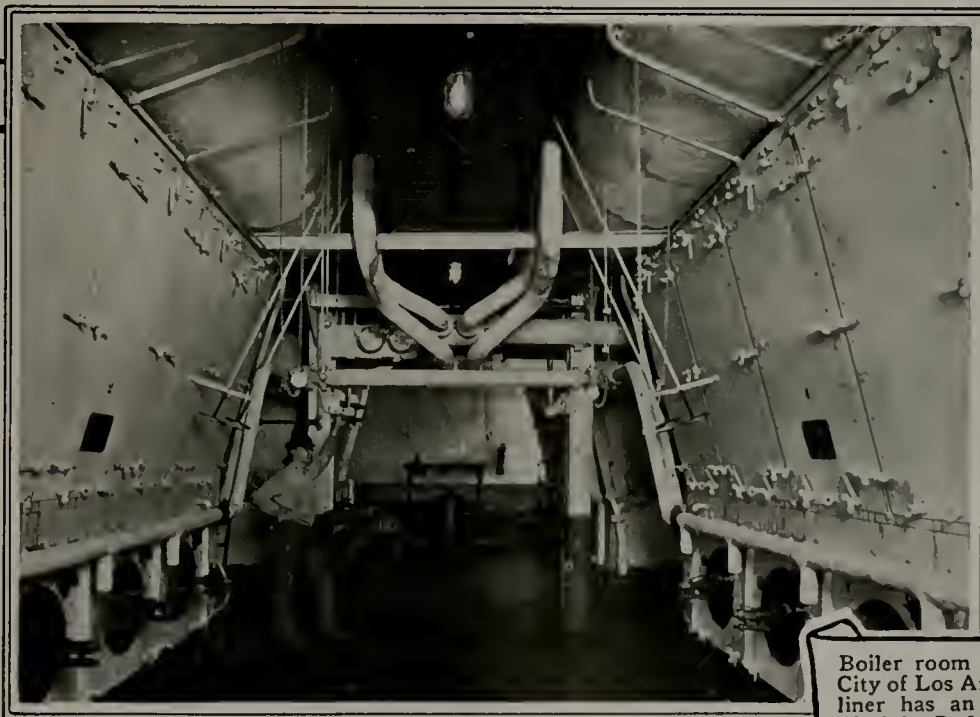
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THE BABCOCK & WILCOX CO.

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San Francisco

CHAS. C. MOORE
PACIFIC COAST MANAGER

Sheldon Building, First St., cor. Market

SAN FRANCISCO, CAL.

Purchasing Agent: Wm. J. Collison.
York, hull 261, steel hull ferry, Gloucester

& Yorktown Ferry Co., Gloucester Point, Va.; 115 LBP; 44 beam; 12 loaded draft; 260 HP C. O. Fairbanks-Morse eng; keel May22/25; launched Aug9/25; delivered Sept4 25.

STATEN ISLAND SHIPBUILDING COMPANY

Staten Island, N. Y.

Purchasing Agent: R. C. Miller.
John A. Lynch, hull 753, ferryboat, City of New York; 151 ft long; launched Mar26/25; delivered July9 25.

Henry Bruckner, hull 754, sister to above; keel Sept2/24; launched June27/25; delivered Aug7 25.

William T. Collins, hull 755, sister to above; keel Sept2 24.

No name, hull 757, sister to above; keel Feb 18/25.

No name, hull 758, sister to above; keel Mar 27/25.

Albany, hull 756, ferryboat, New York Central R. R.; 210 ft long; keel Dec27/24; launch Sept8, 25, est.

SUN SHIPBUILDING COMPANY

Chester, Penn.

Purchasing Agent: H. W. Scott.

Hull 85, carfloat, Pennsylvania Railroad; 358 LBP; 47 ft 4 in beam; 12 ft 6 in depth; keel July29/25; launch Nov30/25, est; deliver Dec 24/25, est.

Hull 86, sister to above; keel Aug1/25; launch Dec16/25, est; deliver Jan9/26, est.

Hull 87, carfloat, Pennsylvania R. R.; 250 L BP; 34 beam; 9 depth; keel July27/25; deliver Nov1/25, est.

Hull 88, sister to above; keel Aug3/25; deliver Nov16/25, est.

Hull 89, carfloat; Pennsylvania R. R.; 145 L BP; 36 beam; 10 depth; keel Aug10/25; deliver Nov17/25, est.

Hull 90, sister to above; keel Aug17 25; deliver Nov31/25, est.

Hull 91, carfloat, Pennsylvania R. R.; 230 L BP; 38 beam; 10 ft 6 in depth; keel Aug31/25; deliver Nov34/25, est.

Hull 92, carfloat, sister to above; keel Sept7/25; deliver Dec10/25, est.

Hull No. 93, tug, for Pennsylvania R. R.; 116 x24x13-8; keel Sept14/25; deliver Nov25/25, est.

TEBO YACHT BASIN, TODD SHIPYARD CORP..

Brooklyn, N. Y.

Purchasing Agent: J. Flynn.

Murray Hulbert, hull 32, ferryboat, Dept. of Plant Structure, City of New York; 148 LBP; 53 ft beam over guards, 37 ft 6 in beam molded; 9 ft 9 in loaded draft; 11 knots loaded speed; 588 gross tons; comp engs; 2 B&W boilers, 1182 sq ft heating surface; keel Sept4/24; launched Dec27/24; delivered July9 25.

Edward Reigelman, hull 33, ferryboat, City of N. Y., sister to above; keel Sept4/24; launched Dec27/24; delivered Aug7 25.

Julius Miller, hull No. 34, ferryboat, City of N. Y., sister to above; keel Sept4/24; launched Jan 27/25; delivered Aug21 25.

Maurice Connelly, hull No. 35, ferryboat, City of N. Y., sister to above; keel Feb19/25; launched Apr23/25; deliver July25, est.

John H. McCodley, hull No. 36, ferryboat, City of N. Y., sister to above; keel Feb19/25; launch June14, 25, est; deliver Aug25, est.

THE CHARLES WARD ENGINEERING WORKS

Charleston, W. Va.

Purchasing Agent: E. T. Jones.

Geo. T. Price, hull 37, tunnel propeller towboat, Kelly Transportation Co.; 126 LBP; 26 beam; 5 loaded draft; 2 diesel engs, 360 BHP each; keel June17/25; launch Oct1/25, est.

No name, hull 38, sternwheel towboat, The Ohio River Co.; 145 LBP; 32 beam; 5 draft; recip 700 HHP engs; return tubular boilers, 42 in x 26 ft; keel Oct15/25, est.

No name, hull 39, steel barge, Kelly Axe & Tool Co.; 150 long; 26 beam; 8 draft.

No name, hull 40, sister to above.

No name, hull 41, sister to above.

No name, hull 42, sister to above.

No name, hull 43, sister to above.

No name, hull 44, sister to above.

Repairs

BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT

Potrero Works

Drydock, paint, misc. repairs: Pennsylvanian, Rio Vista barge No. 2, Minnesotan, Sonoma, Procyon, Water Nymph, D. G. Scofield, Ventura, Venetia. Drydock, paint, engine, boiler and hull repairs: Wapama, Matsonia, W. B. Storey, Harvard, Johanna Smith, Frank G. Drum. Drydock for survey: Mauna Ala, Santa Malta, Melville Dollar. Convert to motorship: Lio. Engine, boiler, hull repairs: Mytilus, Oaxaca, Frank H. Buck. Furnish and install

oil burning system: Poljana. Misc. repairs: Mary E. Moore, Minnesotan, Kalfarli, West Chopiaka, West Carmona, La Purisima, Tejon, San Diego, Progreso, Utacarbon, Dorothy Luckenbach, Manchuria, Guerrero, Maunalei, Wairuna, Chas. Vandamme, Dorothy Luckenbach, Tahiti, Halseo, Daisy, Mahukona, Californian, Covena, Theodore Roosevelt, Kentuckian, Harry Luckenbach, A. L. Kent, Chinha, Tecumsch, Floridian, F. H. Hillman, Coos Bay, Chiapas, Capt. A. F. Lucas, American, Deroche, Daylight, Robin Hood, Loch Katrina.

San Pedro Works

Drydock and repair: stmr. West Carmona, La Purisima, tugs San Pedro, Star, yacht Ylarba. Misc. repairs: stmr. Tejon, Utacarbon, Dorothy Luckenbach, Levant Arrow, Newport, Schreyerport, Leke, Crampton Anderson, Trincula, President Polk, Jacob Luckenbach, E. T. Bedford, Warwick, Java Arrow, schrs. Covena, Halseo, motorship Los Alamos, yacht Bohemian Club, launch Canadaota.

COLLINGWOOD SHIPBUILDING CO., LTD., Collingwood, Ontario

Purchasing Agent: E. Podmore.
New high pressure cylinder, bulwark damage repairs: stmr. Emperor. New blades mounted: tug Henry Pedwell.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, San Pedro, Calif.

Clean, paint, port false keel renewed; m.s. Vaquero. Clean, paint; schr. Manfalcone, whalers Norrona No. 2 (also rudder bearing renewed), Hanka. Clean, paint, misc. repairs: schr. Oceania Vance. Stern post faired, etc.: whaler Columbus. Hull repairs: City Barge No. 60.

VICTORIA MACHINERY DEPOT CO., Victoria, B. C.

Purchasing Agent: H. S. Hammill.
Dock, clean, paint, hull and engine repairs, fit new propellers: Princess Patricia. Dock, clean, paint: Motor Princess (renew false keel, renew propeller shaft), tug Hope (boiler repairs), stmr. Otter (renew keel, engine repairs), tug Olive (boiler repairs, new stern post, new tail shaft), tug Chehalis (boiler repairs), bulk Louisiana (convert to floating cannery). Engine repairs: yacht Invader. Deck and engine repairs: tug Red Fir. Deck, boiler repairs: stmr. Grainer.

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THE unusual care which attends every detail of manufacture of the Washington-Estep Diesel Engine insures a precision and dependability of performance which has won its foremost place among marine engines.

Such installations as those illustrated here are typical of the vessels which are being equipped with these reliable, economical power plants.

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Typical examples of the classes of boats in which these engines have recently been installed, and are giving good service.

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Port Commission Docks, Portland	Oriental Dock Co.
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Records show instances in which the savings in unloading and loading a single ship have paid for the tractors used.

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SAN FRANCISCO

PERSONAL PARAGRAPHS AND ITEMS OF INTEREST

ELLERY STONE, president of the Federal Telegraph Company, headquarters San Francisco, announces the appointment of T. E. Nivison to the position of marine superintendent. Nivison's experience and popularity in the marine radio field have earned him friends on every hand.

Nivison has an enviable record in the radio industry. Before he entered the radio field he was a railroad telegraph operator. In the earlier days telegraph operators always made the best wireless operators, so that Nivison was well qualified to become a radio operator when he entered the employ of the old Clark Wireless Telegraph Company at Detroit in 1908. Enjoying success with that concern he was placed in charge of their radio stations at Detroit, Cleveland, and Buffalo. In 1911 Nivison entered the employ of the old Marconi Wireless Telegraph Company and was stationed at Cape Cod, where Marconi conducted his early experiments. He was at Cape Cod during the Titanic disaster, serving in an important disaster during that strenuous period.

Nivison has been associated with the Federal Telegraph Company since 1912, when he entered the service as a first-class radio operator. Later he became a commercial agent and in 1916 was appointed manager of the Federal Portland office. He later served as manager of the Los Angeles office, where he had charge of all marine activities in the southern district. This wide experience served to qualify Nivison in his present duties as marine superintendent, which covers sales, service, and maintenance of the company's marine divisions.

W. P. PARKER TO SAN FRANCISCO

William P. Parker, formerly chief engineer of the electric drive ship *Victorious*, now laid up at New York, has accepted a position in the oil engine section of the maintenance and repair department of the United States Shipping Board. He will be stationed in San Francisco after October 1.

SHIPPING LEADERS ANNUAL BANQUET

Prominent steamship officials of the San Francisco Bay section will gather at their second annual steamship dinner on Saturday evening, October 24, it is announced by W. J. Edwards, Pacific Coast manager of Norton, Lilly & Company, general chairman of the committee in charge. The initial meeting of the arrangements committee was held recently in the offices of Norton, Lilly & Company. The first



T. E. Nivison
Federal Telegraph Company.

steamship dinner was held last year at the Palace Hotel in San Francisco, and the success of that initial gathering established its annual continuance. The purpose of the affair is to enable the members of the broad marine fraternity to become better acquainted.

S. S. DINNER COMMITTEE-IN-CHARGE

In charge of the steamship dinner are: W. J. Edwards, general chairman; Hugh Gallagher, A. A. Moran, F. M. Bailey, H. S. Scott, John E. Cuhing, H. C. Cantelow, Reginald Bach, F. W. Relyea, J. C. Rohlf, S. W. Hauptman, R. K. Reid, H. R. Struthers, Daulton Mann, T. A. Lee, Frank O'Connor, R. J. Ringwood, E. F. R. de Lanoy, and James Tyson. George Martin is secretary of the committee.

YALE & HARVARD IMPROVES SERVICE

From J. W. Trefry, freight traffic manager of the Los Angeles Steamship Company, comes announcement of a most valuable improvement in the line's well-known service between San Francisco and Los Angeles. "24-Hour Service from Store Door to Store Door," is the new program and became effective last month. The Los Angeles Steamship Company now operates the 24-hour service covering store door pick-up in San Francisco to store-door delivery in Los Angeles, or in reverse direction, in connection with the express liners Yale and Harvard, Pacific States Express, Inc., of San Francisco, and the California Truck Company of Los Angeles. R. M. Grose is general freight agent at Pier No. 7, San Francisco, and J. T. Kennedy is district freight agent, 408 Central Building, Los Angeles.

PARR TERMINAL NEW CHANNEL

The first vessel to enter the new channel to the Parr Terminal, Oakland, California, recently completed, was the General Petroleum tanker *Lebec*, which made entry on September 21 laden with 70,000 barrels of fuel oil. The big tanker, drawing 26 feet of water, entered the north cut of the channel, which was finished September 12, marking another development in the progress of Oakland harbor. Work is under way on the south channel to the Parr Terminal and when completed will enable large vessels to effect entry laden to capacity.

WATSON JOINS BRYANT & COMPANY

Morley Watson, well-known ship chandlery expert, has joined Walter C. Bryant & Company of Seattle as head salesman. Watson entered the marine supply business when 17 years old and has a host of friends in the fleets serving Puget Sound points. Watson has had wide experience in chandlery service in San Francisco, San Pedro, and the Northwest. John Brandmier, Jr., who joined the Bryant staff last year, was recently promoted to the position of office manager.



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AMERICAN-HAWAIIAN S. S. CO.

J. R. Fitzgerald, agent.
215 Market street. Phone Douglas 9560.
C. L. Gibb, assistant agent.
Tribune Tower, Oakland. Phone Oakland 1022.
FREIGHT ONLY.

SAILINGS—Every 5 days from San Francisco, Oakland, Alameda, and Los Angeles to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, denice, Philadelphia, Baltimore, Norfolk, and Portland, Me.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore and Portland Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT.

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Regular sailings between San Francisco, Seattle, Los Angeles, New York, Boston, Baltimore, Philadelphia, and Norfolk.

GARLAND STEAMSHIP CORP.

260 California St. Phone Garfield 4700.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.
FREIGHT ONLY.

SAILINGS—North Atlantic - Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Tacoma, Vancouver, and Oakland, to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agts.
215 Market street. Phone Garfield 5000.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland,

Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARRIBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

2 Pine Street. Phone Sutter 3800.
SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New York. Westward calls: New York, Puerto Colombia, Cartagena, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo Los Angeles, and San Francisco.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Offices: 460 Market street. Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship Co., 60 California St. Phone Sutter 7800.

SAILINGS—Intercoastal.

Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.,
310 Sansome St. Phone Garfield 6760.
285 Bacon Bldg., Oakland. Phone Lakeside 3580.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
F. C. Bennett, Pacific Coast manager.
110 California street. Phone Douglas 1670.
FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego and New York, Philadelphia, Norfolk and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.
Mutual Life Bldg. Phone Elliot 8120.
FREIGHT ONLY.

SAILINGS—Every 10 days from Seattle, Tacoma, Portland, Astoria to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SHIPOWNERS ELECT OFFICERS

THE annual meeting of the Ship-owners' Association of the Pacific Coast was held in San Francisco on September 23, and officers for the ensuing year were elected. F. J. O'Connor, president of the organization, was re-elected for his third term. R. W. Myers was named vice-president, and Nat Levin was re-elected secretary-treasurer. The following board of directors was re-elected for the coming year: F. J. O'Connor, R. W. Myers, L. C. Stewart, L. C. Hammond, James Tyson, S. M. Hauptman, Otis R. Johnson, S. D. Freeman and H. F. Vincent.

OAKLAND OFFICE DAVIES TURNER CO.

Cyrus A. Anderson, Pacific Coast manager of Davies Turnes Company, has opened an office in the Wakefield building, Oakland, California. This is the first regular brokerage office to be opened in the East Bay district and is fully equipped to handle all matters pertaining to the importation of goods, such as customs entries, sampling, weighing, inspection, storage and distribution, and on export shipments all necessary details, including consular invoices, Spanish translations, Custom House clearances, bookings, space, marine insurance, and steamer bills of lading. The office is under the direct supervision of George M. Walker, assisted by Gerald P. Connitt.

CAPT. MITCHELL ON THE JOB

Capt. W. J. Mitchell, with the Peterson Launch & Towboat Company for some time as wharf manager, is still busy on the job at San Francisco headquarters, although the old firm has been merged with the Harbor Tug & Barge Company.



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DOLLAR STEAMSHIP LINE

Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone Elliott 0974.
FREIGHT ONLY.

SAILINGS—Regular sailings between Seattle, San Francisco, Los Angeles, and Philadelphia, New York, Boston, Baltimore, and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone Elliott 5706.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone Elliott 2450.
FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone Elliott 1206.
FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma, and Oakland, to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

Pier B. Phone Elliott 5367.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

Lobby 4 Central. Phone Elliott 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company, Passenger and General Office, 619 Second Ave. Freight and Operating Office:

Pacific Steamship Company.

L. C. Smith Building. Phone Elliott 2068.

SAILINGS—Intercoastal.

Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

W. C. Benson, Agent.

4421 White Building. Phone Elliott 6127.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden & Christenson, agents.

Arctic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

Spokane street terminal. Phone Elliott 6657.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

F. A. Hooper, agent.

Transportation Bldg. Phone 821-336.

FREIGHT ONLY.

SAILINGS—Every 5 days from San Francisco, Oakland, Alameda, and Los Angeles to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks from Vancouver, Seattle, Portland, San Francisco and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone TRinity 4891.

PASSENGERS AND FREIGHT

SAILINGS—Intercoastal.

Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Sailings between Los Angeles, San Francisco, Seattle, New York, Boston, Baltimore, Philadelphia, and Norfolk.

GARLAND STEAMSHIP CORP.

Central Building. Phone Van Dyke 0792.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston and New York.

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street. Phone Main 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma, and Oakland, to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone Metropolitan 6140.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone Vandyke 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.

Freight Offices: 108 West Sixth street.

SAILINGS—Passengers and Freight.

Every 21 days from San Francisco and Los Angeles via Manzanillo, San Jose de Guatemala, Acajutla, La Libertad, Corinto, Balboa, Cristobal, Havana and New York. Westward calls: New York, Puerto Colombia, Cartagena, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo Los Angeles, and San Francisco.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.

Freight Offices: Pacific Steamship Company.

PORTLAND, OREGON, TRAFFIC SURVEY

From the traffic department of the Port of Portland we have received an interesting sailing schedule portraying the shipping lines serving that rapidly growing port. In the schedule are shown two new lines in the European trade, the Navigazione Liberia Triestina with calls at ports in Spain, Italy and Austria, and Wallem & Company with a new service to Europe. Portland is now served by thirteen lines to Europe, ten lines to the Orient, two lines to Australasia, five lines to the West Coast of South America, three lines to the West Indies, one to Hawaii, ten lines to intercoastal ports, and seven to coast-wise points. A booklet entitled "The Gateway of an Empire" was recently issued for those desiring complete information on the Port of Portland.

S. F. WINS

J. E. WYNNE

J. E. Wynne, United States local inspector of boilers at the Portland, Oregon, offices, visited San Francisco for his vacation during Diamond Jubilee Week. He appears in the best of health and told his San Francisco friends that he likes Portland very much. He made calls on a score of old-time shipmates while in the bay region.

GIBBS VISITS CALIFORNIA

William Francis Gibbs, president of Gibbs Brothers, Inc., who are the designers of the Malolo—the largest and fastest high-powered steamship ever built in the United States—now building for the Matson Navigation Company of San Francisco at Cramp's Shipyards, Philadelphia, recently visited San Francisco to confer with officials of the Matson Line regarding operating plans and details of service and construction. From San Francisco Gibbs will go to Honolulu, and from that port will visit the neighboring islands and inter-island ports in a survey of the service that the new steamship contemplated by the Inter-Island Steam Navigation Company will be called upon to meet. Among the points to be inspected by the famous designer are Kaanapali, Kahului, Hane, Mahukona and Hilo. The proposed addition to the inter-island service will run between Honolulu on the island of Oahu and Hanamanla on the island of Kauai, 192 miles to the westward.

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MONGOLIA	Nov. 5
FINLAND	Nov. 19
MANCHURIA	Dec. 9

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MONGOLIA	Oct. 10	Oct. 12
FINLAND	Oct. 24	Oct. 26
MANCHURIA	Nov. 14	Nov. 16
MONGOLIA	Nov. 28	Nov. 30

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Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.

Central Building. Phone Broadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.

407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

WILLIAMS LINE

Williams Steamship Company.

Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.

Railway Exchange Bldg. Phone Broadway 2744.

SAILINGS—Every 10 days from Portland, Astoria, Seattle, and Tacoma to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.

Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.

Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic—Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma and Oakland, to Philadelphia, New York, and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

408 Board of Trade Bldg. Phone Bdwy. 2503.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland west-bound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.

Pacific Steamship Company, freight agents.

Admiral Line Terminal.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal.

Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Montreal. Through bills of lading from other Pacific Coast ports.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.

602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston and New York.

LUCKENBACH LINES

Empire Shipping Company, Ltd.

Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic—Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma and Oakland, to Philadelphia, New York, and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans and Mobile.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.

413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports, San Francisco, Los Angeles to New Orleans, Mobile and Caribbean Sea and Gulf of Mexico ports, Panama Canal. Call at Oakland westbound.

WASHINGTON ESTEP DIESEL SALES

Marshall McGinitie, sales manager of the diesel engine department of the Washington Iron Works, Seattle, announces a steady increase in sales. Since May 1, sixteen Washington Estep diesels, ranging from 50 to 600 brake horsepower, have entered service and are giving excellent results. McGinitie is one of the marine pioneers in the development of shipping in the Pacific Northwest. He came to Puget Sound in 1888. He shipped out on offshore vessels in 1900. He obtained his chief engineer license in 1909 and had service in ships of the Alaska Steamship Company, old Northwestern Steamship Company, and the Boston Towboat Company. After serving as engineer with the U. S. Navy during the World War he returned home to Seattle and was connected with W. H. Pierson & Company and served as port engineer for W. C. Dawson & Company. On October 1, 1921, he was appointed port engineer for the U. S. Shipping Board in the North Pacific district, filling this position with great success, until May 1, last, when he resigned to become director of diesel sales for the well-known Washington Iron Works.

WILLIAMS LINE OAKLAND OFFICES

Fred C. Bennett, Pacific Coast manager of the Williams Steamship Company, intercoastal service, has opened offices at 22-23 Bacon Building, Oakland, to serve the East Bay district, with Ernest Lang as district freight agent. The Williams Line is now making Oakland a regular port of call. The S. S. Tiger arrived September 24 and discharged at the Lawrence Terminals.

PUGET SOUND PIONEER PILOT

Captain Herbert F. Beecher, veteran Puget Sound pilot and son of the late Henry Ward Beecher, was killed recently in an accidental fall from a dock in Seattle. He was widely known through numerous important marine posts held in the Northwest during the past thirty-five years. During President Cleveland's administration Capt. Beecher was collector of customs for the Puget Sound district, and later appointed special agent for the Treasury Department for the District of Washington, Oregon, and Alaska, a post he held until 1889, when the administration changed.

NORTON, LILLY & COMPANY

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ARGONAUT STEAMSHIP LINE (Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

PAN-PACIFIC LINE (Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer).

ELLERMAN & BUCKNALL S. S. CO., Ltd. (Pacific-United Kingdom-Continent Service)

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Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels.)
112 Market street. Phone Sutter 7640.
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SAILINGS—Trans-Pacific.
Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Oriental Service.
Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
Robert Dollar Building, 311 California street.
Phone Garfield 4300.

PASSENGERS AND FREIGHT

SAILINGS—Trans-Pacific.
Weekly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila. Fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.
Guam Service—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila), and Java.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels.)
Sudden & Christenson, agents.
230 California street. Phone Garfield 2846.
FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland at Yokohama, Kobe, Hongkong, and Manila, returning direct to Portland.

OSAKA SHOSEN KAISHA

Williams, Dimond & Co., Agents.
310 Sansome St. Phone Sutter 7400.
SAILINGS—San Francisco Service (**FREIGHT ONLY**).

Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

SAILINGS—Los Angeles Service (**PASSENGERS AND FREIGHT**).

A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their homeward trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
551 Market street. Phone Sutter 3900.

PASSENGERS AND FREIGHT.

SAILINGS—Every two weeks between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

SAILINGS—FREIGHT ONLY.

Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
403 Alaska Commercial Bldg. Phone Gar. 3899.
FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.
City ticket office: 1300 Fourth Ave.
General offices: 1519 R. R. Ave. So.

SAILINGS—PASSENGERS AND FREIGHT.
Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong and Manila.

SAILINGS—FREIGHT ONLY.

Regular service to Vladivostok, Dairen, Tientsin, Tabu Bar, Tsingtao, Shanghai and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.
Central Building. Phone Elliott 7697.
FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
American Bank Building. Phone Elliott 1450.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Elliott 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong or other Oriental ports as inducements offer.

OSAKA SHOSEN KAISHA

Pier 6.
PASSENGERS AND FREIGHT.

SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone Main 3168.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Elliott 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle and Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company, Inc., agents.
Central Building.
FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka and Nagoya.

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.
(Operating U. S. S. B. vessels.)
701-02 Transportation Bldg. Phone Tucker 5969.
FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yoko-

A. P. HAMMOND OPENS S. F. OFFICE

Offices of the California & Eastern Steamship Company were opened recently in the Merchants' Exchange Building, San Francisco, by A. P. Hammond, vice-president and general manager. R. E. Devinney, formerly Oakland manager of the Lawrence Warehouse Company and formerly with Hammond in the Luckenbach and Atlantic, Gulf & Pacific lines, was appointed district manager. The California & Eastern Steamship Company owns two inter-coastal freighters.

E. T. BIVENS BACK IN SAN FRANCISCO

E. T. Bivens, district passenger agent of the Panama Mail Steamship Company, has been transferred to the head office in San Francisco, Clay Hutchison, general agent at Los Angeles for the Panama Mail Line, who has been placed in charge of both freight and passenger activities in Southern California, plans to consolidate the freight and passenger offices about the first of the year, when leases on both departments expire. At present the freight office is at 606 Central Building and the passenger office at 503 South Spring street. The location after December 31 will be announced later.

McCORMICK LINE'S SEATTLE TERMINAL

The fast growing McCormick Steamship Company is now located in its new office at Pier B, Seattle, leased from the Pacific Coast S.S. Co. The McCormick organization leased the pier to provide for greater activity in Puget Sound, having recently purchased the gigantic holdings of Pope & Talbot in Washington State. Pier B has been the scene of great activity in the expansion of Seattle and Puget Sound and under the McCormick flag will doubtless see still more important progress.

L. M. ZIMMER DIRECTS LINDE SALES

L. M. Zimmer has been appointed general sales manager of The Linde Air Products Company, manufacturers of oxygen, and of the welding gas division of the Prest-O-Lite Company, Inc., manufacturers of dissolved acetylene, succeeding L. M. Moyer, who resigned August 1. Zimmer entered the employ of The Linde Company nine years ago as junior salesman, and has steadily risen in rank.



FURNESS LINE
 EXPRESS FREIGHT AND PASSENGER SERVICE
PACIFIC COAST PORTS
 TO
UNITED KINGDOM AND CONTINENT
FURNESS
 WITHY & CO., Ltd.
FURNESS (PACIFIC), LTD.

Pacific Coast Agents
 VANCOUVER — SEATTLE — PORTLAND — SAN FRANCISCO



JOHNSON LINE

DIRECT FREIGHT AND PASSENGER SERVICE
 TO AND FROM

PACIFIC COAST PORTS --- SCANDINAVIAN PORTS

Hamburg and Other European Ports as Inducements Offer

THROUGH BILLS LADING ISSUED TO ALL SCANDINAVIAN, FINNISH & BALTIC PORTS

MONTHLY SAILINGS

VESSELS CALL AT ANTWERP OUTWARD FROM EUROPE

GRACE LINE

EXPRESS FREIGHT AND PASSENGER SERVICE TO AND FROM

WEST COAST SOUTH AMERICA

Los Angeles--San Francisco--Puget Sound--British Columbia---*Monthly Sailings*

FOR RATES, FREIGHT SPACE AND OTHER INFORMATION, APPLY —

W. R. GRACE & CO.

General Agents Pacific Coast
 332 PINE STREET :: SAN FRANCISCO

LOS ANGELES
 M. F. & H. R. McLAURIN Agts.
 San Fernando Bldg.

PORTLAND
 LIDELL & CLARKE

SEATTLE
 W. R. GRACE & CO., Agts.
 Hoge Bldg.

VANCOUVER, B. C.
 C. GARDNER JOHNSON, Agt.

ORIENTAL

and Singapore. Also calls at Dairen, Taku Bar and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone Broadway 7900 and Vandike 4944.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China, ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 874-891.

PASSENGERS AND FREIGHT

SAILINGS—Weekly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila. Fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Trans-Pacific Service.

Regular sailings between Los Angeles, San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSHEN KAISHA

McCormick & McPherson, Agents.
Transportation Bldg. Phone Vandike 6171.

PASSENGERS AND FREIGHT

SAILINGS—A steamer a month to Yobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—Monthly from Los Angeles direct to Yokohama, Kobe, Shanghai, Manila, Singapore, Sourabaya, Samarang, Batavia.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

S. L. Kreider, agent.

375 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

PORTLAND

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
702 Porter Bldg. Phone Main 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels.)

Columbia Pacific Shipping Company.

Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.
Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning direct to Portland.

PORTLAND-ORIENT LINE

Wallem & Company, agents.

Porter Building. Phone Broadway 1844.

SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

UNITED KINGDOM---CONTINENTAL EUROPE

SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.

Dodwell & Co., Ltd., agents.

22 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

TATSUUMA KISEN KAISHA

Walker, Ross, Inc., General Agents.

Yeaton-Coates Co., Agents.

Board of Trade Bldg. Phone Broadway 7574.

FREIGHT ONLY.

SAILINGS—Monthly between Portland and Kobe, Osaka, Yokohama, Nagoya, as inducements offer.

TOYO KISEN KAISHA

(Oriental Steamship Company.)

Oregon-Pacific Company, agents.

812 Spalding Bldg. Phone Broadway 4529.

FREIGHT ONLY.

SAILINGS—Monthly from Portland to Oriental ports.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Company.

1109 Porter Building.

FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.

Yorkshire Building. Phone Seymour 9576.

PASSENGERS AND FREIGHT

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.

Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Oriental Service.

Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.

PASSENGERS AND FREIGHT

SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son, Ltd.

602 Hastings St. W. Phone Seymour 2376.

PASSENGERS AND FREIGHT

SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSHEN KAISHA

Empire Shipping Company, Ltd.

815 Hastings St. W. Phone Seymour 8014.

PASSENGERS AND FREIGHT

SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson Walton & Company.

837 Hastings street, W. Phone Seymour 7147.

FREIGHT ONLY.

SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.

Phone Seymour 2198.

FREIGHT ONLY.

SAILINGS—Regular service to Yokohama, Kobe, Osaka and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA

Yamashita Co., Inc.

Merchants Exchange Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka and Nagoya.

WESTINGHOUSE ORGANIZES IN JAPAN

In order to distribute Westinghouse products throughout Japan the Westinghouse Electric Company of Japan has been organized. The officers of the new company, which is a subsidiary of the Westinghouse Electric International Company, are: Guy E. Tripp, chairman; L. A. Osborne, president; E. D. Kilburn, vice-president; and I. F. Baker, managing director, located at Tokyo. In announcing the new company E. D. Kilburn, vice-president, made the following statement: "The Westinghouse Electric Company of Japan is a newly organized subsidiary of the Westinghouse Electric International Company, incorporated under the laws of the state of Delaware, with a capital of \$1,000,000. The purposes of this company are to distribute Westinghouse products throughout Japan and to arrange for proper service to the many old as well as new users of Westinghouse apparatus in Japan. Adequate stocks will be carried, repair and other service facilities will be provided, and engineering and construction assistance will be supplied to users of the company's products. The staff in Japan will be almost entirely Japanese. It was a simple matter to assemble this staff because there are scores of Japanese engineers who have been employed at the Westinghouse Company Works of East Pittsburgh and elsewhere."

FERDINAND LOYALTY

It is our pleasure to reproduce the following impressive message received from the officials of L. W. Ferdinand & Co. of Boston, Massachusetts: "L. W. Ferdinand & Co. is an old New England business house, founded on wise and honest policies, clearly defined and firmly established by Lorrin W. Ferdinand, who for more than half a century was the head of the concern. With the recent death of Mr. Ferdinand we have lost a leader whom we all loved. We deeply mourn his loss. To us he has left a heritage of high ideals and earnest purpose; a noble example to emulate. It is our duty to carry on the work in the way he outlined. This is our pledge to the many business friends of L. W. Ferdinand & Co., 'Inspired by our loyalty we will strive to serve our company, to make it a worthy monument to our founder.' Respectfully yours, E. L. Ferdinand and L. C. Herring."



An Efficient Freight Service to all Parts of the World

The great fleet of modern ships which constitutes the United States Shipping Board World Freight Service makes frequent sailings to all parts of the world, providing an efficient service which merits the preference of every shipper.

In addition to freight vessels specially adapted to meet the needs of the particular trades they serve, this great fleet includes many of the fastest passenger-cargo liners afloat—a freight service unsurpassed for speed, safety and careful handling of goods.

The combination passenger-cargo services include the swift, modern ships of the American Oriental Mail Line, which make the fastest time between the United States and the Orient; the Oregon Oriental Line, and the fine vessels of the Pacific-Australia and the Pacific Argentine Brazil Lines.

Secure this dependable service and prompt transportation by arranging for your freight to be handled by United States Government ships. Write for full details.

UNITED STATES SHIPPING BOARD
TRAFFIC DEPT. WASHINGTON, D. C.

UNITED KINGDOM---CONTINENTAL EUROPE

hagen, with trans-shipment to all Scandinavian and Baltic ports.
ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
 230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Monthly between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
 General Steamship Corporation, sub-agents.
 240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
 Fortnightly from Vancouver and Los Angeles to United Kingdom.

FURNESS LINE

Furness, Withy & Company, Ltd.
 Furness (Pacific), Ltd.

710 Balfour Building. Phone Sutter 6478-6479.
PASSENGERS AND FREIGHT.
SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
 Fortnightly from Vancouver and Los Angeles to United Kingdom and Continent.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Regular service from Pacific Coast ports to London, Hull and Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
 351 California street. Phone Sutter 6427.

FREIGHT ONLY.
SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, general agents.
 260 California street. Phone Douglas 8040-1-2.
FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
 Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Co., general agents.
 532 Pine street. Phone Sutter 3700.
PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.
 240 Battery street. Phone Kearny 4100.
FREIGHT ONLY.

SAILINGS—Mediterranean Service.
 Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint service of the Royal Mail Steam Packet Company and Holland America Line.)
 120 Market street. Phone Douglas 7510.
PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles, Liverpool, London, Rotterdam, Antwerp and Hamburg.

NORWAY PACIFIC LINE

485 California street. Phone Sutter 5099.
FREIGHT ONLY.

SAILINGS—From San Francisco and Los Angeles to United Kingdom, Continental ports and Scandinavia. Sailings every 30 days.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.
 230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Service from Seattle, Portland, San Francisco and Los Angeles to Marseilles and Genoa as inducements offer.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, Pacific Coast Agents.
 230 California street. Phone Garfield 2846.
 For passengers, Phone Sutter 46.

PASSENGERS AND FREIGHT.
SAILINGS—North Pacific-European Service.

Fortnightly between North Pacific ports and ports in United Kingdom and Continental Europe.

SEATTLE

BLUE FUNNEL LINE

Dodwell & Company, Ltd., agents.
 Stuart Building. Phone Elliott 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool and Glasgow.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.
 823 Alaska Building. Phone Elliott 9104.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports direct to Hamburg, Hull, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.
 Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Monthly between Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique.)
 General Steamship Corporation, agents.
 Colman Building. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Twice a month from Vancouver, Seattle, Portland, San Francisco, Los Angeles to French and other Continental and United Kingdom ports via Panama Canal and West Indies.

FURNESS LINE

(Furness, Withy & Company Ltd.)
 Furness (Pacific), Ltd.

Burchard & Fiske, Inc., agents.
 705 Arctic Building.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.
 Fortnightly from Vancouver and Los Angeles to United Kingdom.

GENERAL STEAMSHIP CORP.

Colman Building. Phone Elliott 5706.

SAILINGS—From Pacific Coast ports to London, Hull, Leith, also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour, Guthrie & Company.
 Dexter-Horton Bldg. Phone Elliott 1464.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company.
 Alaska Building. Phone Elliott 2450.

FREIGHT ONLY.

SAILINGS—Pacific-United Kingdom Service.
 Every 3 weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to London, Liverpool, Manchester, Glasgow, Avonmouth and other United Kingdom ports as inducements offer.

JOHNSON LINE

W. R. Grace & Company.
 Hoge Building. Phone Elliott 5412.

PASSENGERS AND FREIGHT.

SAILINGS—Monthly between Pacific Coast ports and Bergen, Christiania, Gothenberg, Malmo, Copenhagen, Stockholm and Helsingfors.

NAVIGAZIONE LIBERA TRIESTINA

General Steamship Corporation, agents.
 Colman Bldg. Phone Elliott 5706.

FREIGHT ONLY.

SAILINGS—Mediterranean Service.
 Regular sailings from Pacific Coast ports to Trieste, Leghorn, Genoa, Naples, via Spanish ports.

NORTH PACIFIC COAST LINE

(Joint Service of the Royal Mail Steam Packet Company and Holland America Line.)

204-206 Rainier Building. Phone Elliott 4944.

PASSENGERS AND FREIGHT.

SAILINGS—Every 2 weeks between Vancouver, Puget Sound, Columbia River, San Francisco, Oakland, Los Angeles and Liverpool, London, Rotterdam, Antwerp, Hamburg.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

Norton, Lilly & Company, general agents.

M. S. TISUAREN CALLS AT S. F.

The motorship Tisuaren called at San Francisco recently. She came over in ballast and is loading lumber from the Northwest for Australia. She is of 9400 tons deadweight, is fitted with two Gotaverken Burmeister and Wain, 6-cylinder diesels, each developing 2000 brake horsepower. Fully loaded she makes 14 knots sea speed on 14 tons oil fuel per day for all purposes. She is a very finely appointed vessel, with accommodations for 15 cabin passengers. The engine room is in charge of Chief Ardol Svensen.

HAROLD BATES JOINS BRIDGEPORT

Harold Bates, widely known expert in sales and engineering work, has joined the sales department of the Bridgeport Brass Company and will be engaged with matters pertaining particularly to sales organization and research. Bates' experience with important public utility and industrial organizations will be of especial value in the working out of plans to broaden the scope of the Bridgeport Brass Company's service to its customers.

BROWN COMPANY OPENS COAST BRANCH

The Brown Instrument Company of Philadelphia, whose products are well known in marine and industrial fields, have established a factory branch sales office at 363 New High street, Los Angeles, from which they will handle the sales for the entire Pacific Coast and Pacific export trade. S. F. Godfrey, who has looked after the Brown Instrument Company business both as part of the Braun Corporation organization and as partner in the Clapper and Godfrey partnership, will be retained as branch manager under the new arrangement, by which he hopes to be in a better position to serve the trade.

STEAMER SOLD

Fred Linderman, San Francisco, has sold the steamer Rosalie Mahoney to the Border Line Transportation Company. The vessel has been recently operated by the Charles Nelson Company in coastwise trade. Built at Hoquiam in 1913, the Rosalie Mahoney is 201.1 feet long, 41 feet beam, and has a depth of 26 feet. She is of 527 net tons register.

Fiji

ISLANDS

Via HONOLULU and
SAMOA to SUVA and
AUSTRALIA

THE Oceanic Steamship Co. is operating a passenger and express freight service from San Francisco direct to lovely Suva, chief port of the Fiji Islands, with sailings Oct. 20 and Nov. 10 and every 21 days thereafter.

This service makes directly available to the American tourist a different vacation land—alluring, picturesque, and restful, but with modern hotels, golf courses, and fine motor roads. To the commercial world, the new 15 day service to Suva is a distinct time-saver.

The Oceanic Steamship Company offers:

The short route from America to the South Seas and Australia

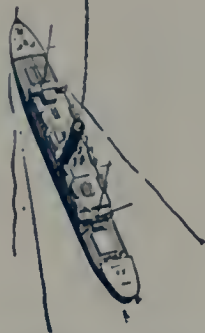
Its comfortable liners S S Sierra, S S Sonoma, S S Ventura (rated Lloyd's 100 A1) sail from San Francisco, touching at Honolulu, Samoa, Suva and thence direct to Sydney. The time of the complete voyage from San Francisco to Sydney, Australia, remains the same—19 days.

For passenger and freight tariffs apply to

Oceanic Steamship Co.

Spreckels Line

2 PINE STREET - SAN FRANCISCO
TELEPHONE DOUGLAS 5600



NORTH PACIFIC COAST LINE

JOINT SERVICE OF



The Pioneer Refrigerator Service

Fast Freight and Passenger Service between San Francisco, Los Angeles Harbor, Portland, Astoria, Seattle, Victoria and Vancouver, and Liverpool, London, Rotterdam, Antwerp and Hamburg.

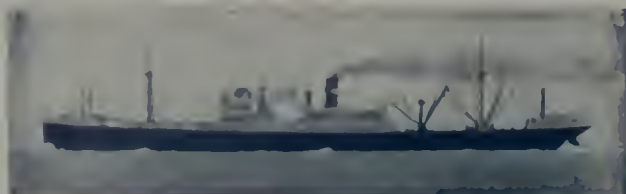
All Vessels Equipped With Refrigerators for Transportation of Fish, Fruits and Other Perishable Cargo

FOR PARTICULARS APPLY

HOLLAND-AMERICA LINE

120 Market Street

San Francisco, Cal.



OCTOBER is an ideal month to visit Hawaii, the Pacific Wonderland. The trade winds are blowing, keeping the islands fresh and cool, tropical fruits are ripe, swimming, surf-riding and outrigger canoeing are at their best, and you can live outdoors every day.

Hawaii is literally "fine any time" for a visit, but October and November are particularly good, as the summer tourist rush is over, hotel accommodations are better and winter travel has not become heavy. Take the children along. They'll enjoy the islands, too.

Visit HAWAII this month or next. Matson Line inclusive (all expense) 21 day tours range in cost from \$269 to \$378, each person. Fare only, \$180 to \$220, round trip.

Write us for literature.



Matson Navigation Co.

227 Market Street, San Francisco

(Mail This Coupon Today!)

Send me your booklet, "Delightful Days on Matson Ships," and "See All of Hawaii," describing Matson voyages and inclusive (all expense) tours in the Islands.

Name

Address



Can dirty oil wreck your ships?

Of course, dirty oil can neither pile a vessel on the rocks nor send it to the bottom. But it can easily wreck the engines, which aside from the hull represent your greatest single investment.

You insure your engines against wreckage at a rate away below the cost of hull insurance when you install

De Laval Oil Purifiers

Above is shown a De Laval Oil Purifier of the type used on lubricating oil. The De Laval Fuel Oil Purifier is equipped with closed flexible hose connections with quick-opening unions at inlet and outlet points, and gasketed cast aluminum covers. This construction makes the machine vapor-tight, so that it is entirely safe to purify oil while at a temperature higher than its flash-point, as is often necessary in burning low gravity oils.

These machines are the most positive means known of removing impurities from either lubricating or fuel oil. They do their work by a strong centrifugal force, the effectiveness of which is multiplied many times by a series of discs placed within the bowl, or purifying chamber to divide the oil into thin layers and so facilitate purification. Regardless of its previous condition, oil which comes from the De Laval Purifier is CLEAN.

Clean lubricating oil lessens bearing wear and removes the possibility of an accumulation of sludge stopping the flow of oil entirely. Thus it enables Diesel engines to give longer service at lower cost.

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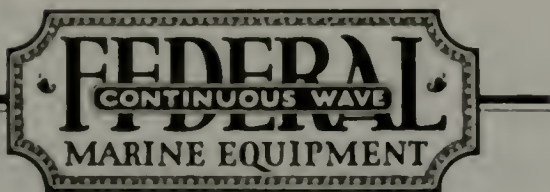


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SCRAP AND BUILD

By WILLIAM FRANCIS GIBBS

WHEN Senator Fletcher of Florida in his statement that the portion of the laid-up fleet that has been so much in the public eye recently should not be regarded as junk fit only for scrapping he is unquestionably representing a general, and rather large, element of public opinion.

Of course they look like effective ships, and it did cost a lot of emergency money to build them in the Great Emergency. But the economic effectiveness of any machine cannot be judged merely by its appearance or cost of preservation in idleness. The efficiency must be judged in comparison with mechanisms in service. The economic tragedy of war is that today these ships in the scrapping bids are effective only for what can be recovered as scrap. Personally, I believe too little informative emphasis has been placed on this matter by the shipping industry, and to my mind there is no doubt that Senator Fletcher does represent a large element of critical but unjust public opinion that must be recognized more fully by the shipping interests.

There is no doubt that the American public generally is rather suspicious at the idea of this wholesale junking of ships that can float and whose superstructures look pretty much like those of any other ships that sail the seas.

Unfortunately, it is difficult for the average citizen to appreciate the necessity for building new tonnage, or planning for such building, when he thinks of the long lines of ships tied up in the Hudson River, James River, and elsewhere—which, to his mind, from external appearances, are very much like the ships which are in active service. The thought of applying the acetylene torch to ships apparently sound and which but a short time ago cost millions to build is instinctively abhorrent to the man in the street; and this resentment will reflect itself in elections; Congressmen and Senators will have to meet the questions—and the other officials as well.

Once let this fleet be scrapped and the public and Congress be only partially or idly informed and they will meet for years—whenever there is any attempt to get some constructive American understanding and protection of American merchant marine—the awkward questions as to why ship owners did not buy ships when they were going a-begging for a buyer, instead of allowing them to be scrapped for old iron.

Actually, of course, the majority of these idle ships are as useless for the maintenance and upbuilding of our merchant marine as percussion cap muskets of the Civil War era would be for equipping our army of today. They are one of the industrial tragedies of the war—built when their building was a marvel of achievement in that they could be built at all. It was like building a fire engine after the fire broke out. But we did it.

A duty rests upon us in the shipping field; therefore, to clearly educate the people as to the true status of these idle ships of the real necessity of providing for adequate new tonnage for replacements. There must be thorough enlightenment of the public mind

as to why these idle ships are unusable, and they are entitled to it.

I have listened with respect to the various schemes proposed for disposition of these ships, but most of them would cost more for the purpose to be served than would other available means. It seems, to the uninformed, cruel to junk them, but it is only one (and let us hope the last) of the wasteful tragedies of war. Let them be scrapped, and then let us face the problem of the future of American shipping and the goal of an American merchant marine. Other nations have their prosperous merchant marines; why not the United States? There is but one answer. And we should make it. These ships are essentially junk from an economic standpoint in the light of present and future shipping needs. But until the truth of this is convincingly manifested to the American public, enterprise will be halted, constructive planning will be handicapped, and the shipping of the future will be prejudiced to a point perilously close to disaster.

Scrap and build—but take time to explain to the people why the first is an absolute prerequisite and the second an essential thing for their future peace and security. Once let the people visualize these two factors in their true proportions, and we can confidently count upon their hearty support.



TOURIST THIRD CABIN

IN readjusting themselves to the new immigration quotas, trans-Atlantic steamship companies are now developing a tremendous trade in tourist third-class. This trade comes mainly from students, teachers, and preachers and is a very healthy, happy development all around for the steamship companies and for the passenger.

Tourist third class gives "a comfortable bed, a reasonable amount of stateroom space, three good square meals a day, a deck chair and rug, and plenty of bracing sea air for the round trip at considerably less cost than the minimum rate for a one-way berth in first cabin."

This service is proving very popular on the exclusively one class ships, and it is estimated that fully 40,000 Americans will have made the round trip under the new conditions before the summer season is over.

American practice in the enforcement of the immigration laws should be so modified as to encourage a flow of European visitors of the same type. Students, teachers, preachers, and professional men and women coming here on summer vacations would mean good business for American steamships and for American merchants and would help to cement international friendships.



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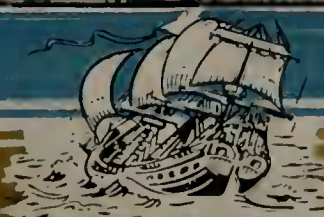
The National Magazine *of Shipping*

NOVEMBER, 1925

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The Union Carbide and Carbon Research Laboratories, Inc., occupies almost a city block of floor space in this large building in Long Island City. Floor space, however, means little in a research laboratory if men and equipment are lacking. The equipment is as complete as that of any laboratory in the United States and the caliber of men is indicated by the fact that one of chemistry's most coveted prizes—the Perkin Medal—was recently awarded to one of the staff.

THE Union Carbide and Carbon Research Laboratories, Inc., at Long Island City, is really manufacturing standards for the oxy-acetylene process.

New applications of the process usually originate in the field. They could be developed by the trial and error method and passed from one welder to another by rule of thumb instruction.

The Linde Company, however, submits such new applications to its research laboratory. Here, not only is the weld tested, but the correct procedure worked out so that it is metallurgically sound. Applications perfected in the Linde laboratory work—not occasionally, but *every time*.

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The MALOLO is the largest and most expensively furnished vessel yet laid down in the United States, the designs calling for a 22,000 ton vessel, 582 ft. long with 83 ft beam and 28 ft. 6 in. draft. Over two years will be required for completion and the contract price is \$6,560,000. She is to be placed upon the San Francisco-Honolulu route and is expected to make the trip in 4½ days. She is to be propelled by two screws each driven by geared turbines, each propelling unit developing 12,500 H. P. at a propeller speed of 120 R. P. M., which will drive the ship at 21 knots. The four De Laval reduction gears are the largest of any yet built in this country, the pitch diameter being 140 in. and the total width of working face, 57 in. De Laval Turbines and Gears are used on the most notable recent passenger and freight vessels, such as EL OCEANO, MUNARGO, CARABOBO, BOSTON and NEW YORK, as upon the faster and most powerful naval vessels, such as the scout cruisers RICHMOND, TRENTON, MEMPHIS, MARBLEHEAD, CONCORD, etc.

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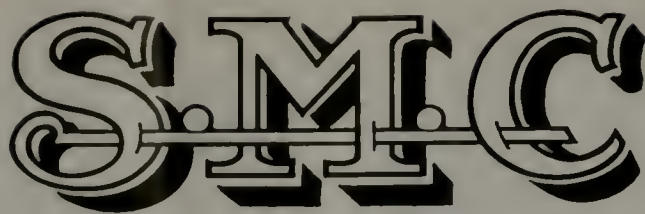
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• THE BUND AT SHANGHAI

Shanghai has been rapidly forging ahead as a World Port and is now second only to New York in point of water borne tonnage.



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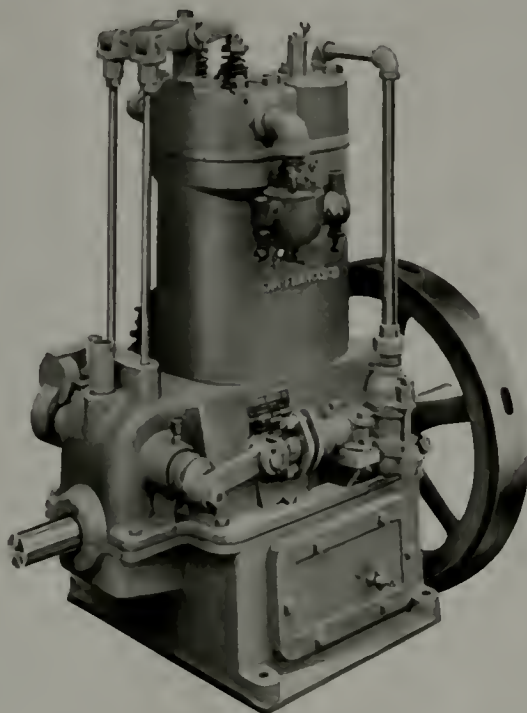
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Alexander J. Dickie
Editor.

Paul Faulkner,
Advertising Manager

Oriental Opportunity

CAPTAIN ROBERT DOLLAR, hearty Viking of 81 and just back from his nth trip around the world, is spreading over the Pacific Coast a healthy spirit of foreign trade shipping optimism. The captain states that notwithstanding revolution, unsettled government, and political chaos in China; notwithstanding industrial and maritime strikes in all Chinese ports; notwithstanding the anti-foreign agitation which we have been told amounts in some localities to practically a commercial boycott; notwithstanding all these handicaps Shanghai and Hong Kong have in the last two years forged ahead so rapidly that they have gained a firm second and third place, respectively, among the world's greatest handlers of tonnage. "In respect of tonnage of cargo handled over the piers," says the Captain, "New York stands first, Shanghai second, Hong Kong third, and London fourth."

This statement, coming from such an authority, is of immense interest to Pacific Coast shippers, exporters, and importers. The Orient, long in process of awakening, is apparently just in the act of getting out of bed, and will presently take a cold shower, indulge in a brisk rub-down, dress, and come down to breakfast. The Pacific Coast shipper should move at once to see that the Orient catches the right train and meets the right people and buys the right goods. It is up to us to make good commercially with our trans-Pacific neighbors and to get more intimately acquainted.

Julean Arnold, long time commercial attache at the Peking Embassy, has been showing us a few methods to that end. Every traveler who visits China comes back with the same tale of wonderful awakening. Chester Rowell, for instance, veteran publisher, comes back from China with this thought-producing remark: "In twenty-five years there will be more newspaper readers in the Chinese Republic than there are now in the United States." Let's get busy and meet this opportunity.

The Sic Line

FOR the last few months hardened old shell-backs on the Atlantic seaboard have been trying to twist their tongues and quids around a new one in ship nomenclature. The moniker that has them all guessing appeared on the bow of an Italian cargo carrier in this wise, "Sic Vos Non Vobis."

A few of the marine supers were able to scratch out the idea that it was Latin. Finally it was located as

a line from Virgil, and found to mean literally "Thus ye not for yourselves." It is an epigrammatic idiom, and may be freely translated, "Thus toil ye, but not for yourselves." The story goes that Virgil, having been accused of plagiarism by some lesser poet, wrote this phrase as a first line to each of four stanzas, leaving the other three lines in each stanza a blank. He then posted this sheet in the Forum and challenged his accuser to finish the poem. The poem has never been completed.

A British contemporary points out that this phrase is a very good name for a cargo ship in these lean times, because no cargo ship at present freight rates earns anything for herself. This idea, being especially appropos to the United States Shipping Board ships, suggests a "Sic" line. "Sic Vos," "Sic Semper," "Sic Volo," and so on almost ad infinitum. Best of all and most welcome to the ears of the American shipowner would be that famous phrase "Sicut Ante Bellum."

"Sic 'em, Towser!"

Board vs. President

THE retirement of Admiral Palmer as head of the Emergency Fleet Corporation by the direct action of the Shipping Board has brought the controversy between the latter body and President Coolidge to a "show down." However, sectional opinion may regard Admiral Palmer's administration, it is undeniably true that, placed in office on an economy program, he has very faithfully lived up to that program, and has given the Emergency Fleet very efficient and competent leadership.

There has been much criticism in New York over economies effected in the conduct of passenger and freight business in the Atlantic lines of the Shipping Board. Some critics have charged that economies were being practised to such an extent as virtually to hand over the business to the foreign lines. It will be interesting to see what President Coolidge will recommend that Congress do to the Shipping Board.

Encouragement for Shipbuilders

IN AN official report on the American merchant marine, issued September 14, 1925, Admiral Benson, former chairman of the United States Shipping Board, calls attention very shrewdly to the necessity for commercial reasons of balancing the passenger fleet of the United States lines on the North Atlantic. "It is vitally important," says the Admiral, "that

two combined passenger and freight vessels of approximately 30,000 gross tons each, with internal combustion engines giving at least 20 knots sea speed, be built as promptly as possible, whether the Government intends to operate or to sell." These vessels should be easily convertible to airplane carriers in case of emergency."

Figuring that the average useful age of a passenger cargo liner is twenty-five years and the average age of a freighter twenty years, the Admiral concludes that a reasonable replacement program from 1928 on, including the two vessels mentioned above, would be an average of 30,000 gross tons of passenger liners and 200,000 tons of cargo liners per year for ten years.

The report is a careful analysis of the problem of maintaining an American merchant marine. Its logic is irresistible, and its conclusions irrefutable. Every ship owner and every ship builder should carefully study this document. The "doughty old sea dog" certainly brings great comfort to the American shipbuilding industry. A program such as that outlined would multiply four-fold the tonnage at present building in American yards.

Foreign Trade Statistics

ALL statistics should be first analyzed, then utilized. This is particularly true of statistics with reference to far distant places, events, or persons. Foreign trade statistics usually fall in this classification. As an illustration, take the recently published figures showing the import tonnage of the United States for the fiscal year ended June 30, 1925. These showed a decline of 1,725,000 tons, as compared with similar figures for 1924. Shall shipping men then be filled with gloom over return cargoes? Certainly not, if they have made analysis of the detail figures making up the total.

The largest item in the detail shortages that make up this figure is Mexican oil, and this item alone shows a decrease of 2,000,000 tons. The next in order is Canadian grain, diverted down the St. Lawrence instead of coming to the United States Great Lakes ports. This item was 1,620,000 tons short of last year's record.

On the other hand, imports from practically every overseas country showed a healthy increase. The principal items were: Europe, an increase of 337,000 tons; West Indies, an increase of 800,000 tons; South America, an increase of 334,000 tons; Central America, 110,000 tons; Africa, 96,000 tons; and Orient an increase of 200,000 tons. Yes, it is good to analyze statistics before using them.

High Pressure Steam

WE RECEIVED recently a very interesting letter from an 84-year-old Scotch marine engineer and naval architect of world-wide fame, in which he exults, with all the conservatism of his race, in being privileged to build a water-tube boiler to deliver steam at 550 pounds pressure to a marine turbine. Together with another by no means young Scotch shipbuilder, and an elderly English engineer, this doughty enthusiast is going to put over the first commercial high pressure steam marine power plant.

Parron, Burny, Yarrow are names to conjure with

in shipbuilding and marine engineering circles. Each of these men has achieved honor and independence, and each of them has passed the allotted span of life. Yet here they are entering with youthful enthusiasm into a great adventure in thermodynamics. They are convinced that there are great possible economies in the use of steam which have not yet been developed in marine plants. They are spending their own money and using their own resources for the honor of their profession and for the benefit of the industry which it serves. All success to their efforts. May their example inspire and their success encourage other engineers and shipbuilders to go and do likewise!

A Successful Shipyard

IN THESE days of lean pickings for our shipbuilding friends we always welcome evidence of profit, and so are glad to see the splendid record made in the last fiscal year by the Shanghai Dock & Engineering Company, Ltd., of Shanghai, China. This firm declared dividends during the year totaling 14 per cent on the par value of the capital stock, and in addition put by a large surplus in the current accounts. Several medium sized steel vessels have been built and engined, and a tremendous volume of voyage and permanent and emergency repairs handled.

Shanghai must indeed be a busy port to show large profits in a shipyard in 1925.

The U. S. Navy

EVERYBODY is taking a fling at the Navy these days. Three disasters with large loss of life, followed by the Air Service investigation, have brought a large volume of unfavorable publicity. We do not feel that we are at all competent to judge of the technical matters involved in placing blame for the disasters or in planning any reorganization of the air service, but we desire to call the attention of traders and shippers on the Pacific Ocean to a few recent happenings whereby the U. S. Navy has been advertising the United States in a most favorable way.

Quite recently there has come to our desk a bundle of papers from New Zealand which describe in picture and text the August, 1925, visit of the United States Fleet to the Antipodes. That visit brought some tens of thousands of "happy, cheerful, intelligent American boys" into intimate contact with the people of Australia and New Zealand. The ships themselves were actual demonstrations in their fittings of many American products. The New Zealanders, at least, are convinced that the American "gob" is just about the best "commercial traveler" that we could send to their shores.

That is good stuff for the Navy. What is true of Auckland and Wellington, Christchurch and Dunedin, Sydney and Melbourne, is probably also true of every other port at which our Navy calls. Whether battle-ships or "Zepps," cruisers or planes are to be the final war lords of the sea is not nearly so interesting to us as is the nature of the reactions to the peace time contacts made by our good jack tars under Old Glory in every port on the commercial waterways of the world.

American-Hawaiian Steamship Company

The Story of the Origin and Development of America's Pioneer Intercoastal Cargo Liner Service

Installment I

THE American Hawaiian Steamship Company is the oldest firm engaged in the American intercoastal service. In order to understand the genesis of this company it is necessary to go back into sailing ship days.

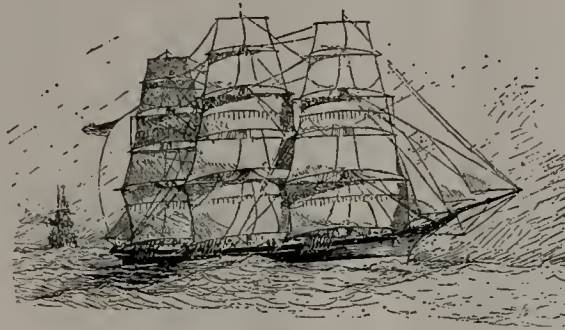
Fifty-one years ago George S. Dearborn affiliated himself with the firm of Simonson and Chesebrough, the agents at New York for the California Line of clipper ships. This firm subsequently became Simonson and Howes. In the year 1879 Robert B. Van Vleck secured the agency of the California Line from Williams Blanchard & Company, the then owners, and Mr. Dearborn became associated with Mr. Van Vleck. A year later the firm of Van Vleck, Sewall & Dearborn was established and continued until 1888, when Mr. Sewall retired to join the famous shipbuilding firm of Arthur Sewall & Company of Bath, Maine, and Mr. Van Vleck sold his interest to Mr. Dearborn.

From that time the firm name was changed to Dearborn & Company and the business carried on until 1898, when Dearborn & Company amalgamated with Flint & Company who had also been in the clipper ship business, and formed the present American-Hawaiian Steamship Company.

During the period from 1880 to 1892 the sailing ship business around the Horn was fairly prosperous. In 1893 occurred the railroad war between transcontinental railway companies and the Panama Steamship Company, and for a few years rail rates were as low as were the sailing ship rates round the Horn. It is greatly to the credit of George Dearborn and his associates that during the period of time from 1893 to 1900, during which time sailing ship lines just about paid their operating expenses, the California Line maintained schedules to a remarkable degree and served the shippers of California and of the Northwest faithfully and well.

California Clipper Cargoes

Cargoes in those days consisted largely of bulk materials, such as iron and steel rails, pig iron, billets and blooms, barbed wire, iron nails, horse shoes, large quantities of case oil, including kerosene, turpentine, naphtha, lubricating oils, and cotton seed oils, large quantities of marble were also carried, and it is narrated of one ship that her cargo consisted of several hundred barrels of whisky, two or three hundred tons of marble, and a dozen hearses. The captain, a pre-Volstead wag, noted that he had whiskey enough to kill the whole population of California and enough marble for tombstones and headstones, but scarcely enough hearses.



A California Line clipper, leaving New York in a snow storm in the early eighties

Of interest to the marine fraternity, in the early manifests may be noted large quantities of rosin, pitch, and tar in barrels, oakum in lots from one thousand to two thousand bales, and locust tree nails in lots of from fifty to one hundred tons. Tree nails in the early days were used not only for ship repairing and shipbuilding purposes, but also to some extent in fastening buildings to-

gether. Quite large shipments of printers' ink in barrels at times appeared on the manifests. Large quantities of hardwood lumber were also carried westward, together with wagon spokes, fellows, rims, whiffle trees, and other carriage parts, tobacco, sash weights, vinegar, paint, in short everything which was needed on the Pacific Coast and in the shipment of which it was advantageous to secure low freight rates at the expense of time of delivery.

The voyages averaged about four and a half months, passages being sometimes made in one hundred days or less and sometimes taking two hundred days or over.

Agitation for Steam

During all of this time and particularly during the last ten years of the last century, there was considerable agitation for the establishment of steamship lines. George S. Dearborn, himself, had realized for a number of years prior to the organization of the American-Hawaiian Steamship Company that the service demanded greater certainty of schedule and he had been quietly studying the possibilities of a steamship line. American ship builders, notably Roach of Chester, Pennsylvania, and Irving M. Scott and George W. Dickie of San Francisco, were actively engaged in trying to create public interest in the building of a fleet of steamers to undertake this service.

While the efforts of these gentlemen were being expended in creating public interest, the Spanish-American war suddenly developing in 1898 concentrated the attention of the people of the United States upon the necessity for an American merchant marine, and Mr. Dearborn was successful in getting sufficient capital invested in the enterprise to warrant the formation of a steamship company.

Company Organized

For eastbound cargoes Mr. Dearborn planned the movement of Hawaiian sugar via the Straits of Magellan in steamers to the sugar refineries on the Atlantic Coast. This product was formerly moved by sailing vessels to San Francisco, thence overland by rail. The sugar growers in the Hawaiian Islands and the sugar brokers and refineries on the Atlantic Coast subscribed

the initial capital necessary to establish the company. These, together with personal friends of Mr. Dearborn and his associates, purchased \$750,000 in stock and a bond issue of \$900,000. Ship builders, notably Henry T. Scott, helped in the sale of the bonds.

From the proceeds of this capitalization, four steamers, the American, Hawaiian, Californian and Oregonian were built, the Californian at the Union Iron Works, San Francisco, and the other three at the Roach Shipyards, Chester, Pennsylvania.

The sale of the stock and bonds was consummated in the year 1899, the company having been incorporated on March 7, 1899, with the following officers:

George S. Dearborn, President.

Wallace B. Flint, First Vice-President and Treasurer.

A. Chesebrough of Williams, Diamond & Co., Second Vice-President.

H. E. D. Jackson, Secretary.

W. D. Burnham (of Flint & Company,) Manager.

Late in 1900, Flint & Co. becoming involved in financial difficulties, sold their interest in the new steamship company to Lewis H. Lapham, brother-in-law to George S. Dearborn, Mr. Lapham succeeding Mr. Flint as first vice-president and treasurer on December 1, 1901.

At the organization of the American-Hawaiian Steamship Company, Flint, Dearborn & Company became the general agents at New York, and Williams, Diamond & Co., general agents for the Pacific Coast, Flint, Dearborn & Company being changed to Dearborn & Lapham in 1900, under whose auspices the agency was conducted until 1915.

Growth Of Fleet

On June 28, 1900, the Californian, first steamer built for the company, was delivered at San Francisco by the Union Iron Works. The three vessels built at the Roach Shipyards followed in October 1900, January 1901, and May 1901. The Alaskan, built by the Union Iron Works, was delivered in November 1901.

With these vessels the American-Hawaiian Steamship Company opened up the intercoastal service through the Straits of Magellan with a schedule of 50 days from New York to San Francisco, stopping twice en route for coal. The cargo outbound from New York to San Francisco consisted of practically the same materials that had been carried in the sailing ships; namely, every commodity that demanded a low rate of freight and could stand the sea trip of 50 days. East-bound for about nine months of the year these steamers were kept full with shipload lots of raw sugar in sacks from Honolulu to Atlantic ports. The other three months the principal cargo consisted of canned goods from the Pacific Coast ports.

Business grew and additional ships became necessary; so that we find the fleet augmented by the Nevadan, the Nebraskan, and the Texan during 1902, all built by the New York Shipbuilding Corporation, and the Arizonan in February 1903, built by the Union Iron Works, San Francisco. These nine ships constituted the fleet of the company until April 1907, when in preparation for the opening of the Tahuantepec route and the possible cutting in half of the schedule the company began the construction of additional tonnage. They contracted with the Union Iron Works, San Francisco, for three freight vessels, the Mexican, Columbian, and Isthmian, all of which were delivered before the close of 1908. Also during 1907 the American-Hawaiian purchased the Missouri and the Maine from the Atlantic Transport Company of West Vir-

ginia, renaming them the Missourian and the Virginian.

Demands for space increased rapidly, and in 1910 the Kentuckian, Georgian, and Honolulu were built at the Maryland Steel Company. In 1911 the Massachusetts of the Atlantic Transport Company was purchased and renamed the Kansan. In 1913 the Minnesotan, Dakotan, Montanan, Pennsylvanian, and Panaman were built for the company by the Maryland Steel Company; in 1914 the Washingtonian, Iowan, and Ohioan; in 1915 the Floridian; and in 1916 the Arborean and Artisan. The Floridian was built to replace the Washingtonian, which had been rammed off the Virginia coast by a coastwise schooner and sunk with a full cargo of sugar, but without loss of life.

European War

The great demand for tonnage on the opening of the European War and the disorganization of ocean trade route consequent to that conflict induced the American-Hawaiian Steamship Company to sell a number of its vessels in 1915 and 1916. The vessels thus disposed of were the Nevadan, Nebraskan, Artisan, Arborean, Isthmian, Georgian, and Honolulu.

When the war started in August 1914, the fleet of the American-Hawaiian Steamship Company consisted of twenty-six vessels. The Artisan and Arborean, delivered in 1916, made a total of twenty-eight. From November 1914 to April 6, 1917, nine vessels of this fleet from time to time were employed in the trans-Atlantic trade carrying supplies to the allies. During this time the Missourian and the Kansan were sunk by torpedoes. As the war record of these vessels will be the subject of a separate article to appear later, no further details may be mentioned here.

The end of the war found the American-Hawaiian Steamship Company with a fleet of sixteen steamers and an excellent organization, ready to take up the intercoastal trade through the Panama Canal.

Post War Expansion

In March 1920 the American-Hawaiian Steamship Company purchased the controlling interest in the Coastwise Transportation Company, thus adding ten Atlantic coastwise steamers to its fleet. This purchase was predicated on a contract for the transportation of coal to Europe at the time of the great British coal miner strike. The profits expected from this contract failed to materialize and the general after the war deflation prevented finding other business for these ten colliers, so that by February 1922 the company had sold seven of these colliers to a newly formed Coastwise Transportation Corporation, retaining three which had been converted for general cargo purposes and which were renamed the Nebraskan, the Nevadan, and the Georgian.

In May and June of 1922, the American-Hawaiian Steamship Company took delivery of two fine modern motorships which had been built for them by the Merchant Shipbuilding Corporation and engined by the Wm. Cramp & Sons Ship & Engine Building Company. These were the Californian and the Missourian, sister motorships, which have been described in detail in former issues of *Pacific Marine Review*.

Early in this year the Steamship Hawaiian was sold and the company acquired six vessels formerly operated by the Pacific Mail Steamship Company and owned by W. R. Grace & Co.; namely, the Santa Barbara, Santa Clara, Santa Malta, Santa Olivia, Santa Paula, and Santa Rosa. Thus the company's fleet stands today at twenty-four steamers and two motorships.

Part of the American-Hawaiian Fleet



American-Hawaiian Steamship Company's freight steamship Iowan, motorship Missouriian, steamship Mexican, steamship Texan, steamship Ohioan, and steamship Pennsylvanian.

This sketchy outline of the story of the American-Hawaiian Steamship Company will give a comprehensive idea of the ship-owning activities of the company. It is intended in later issues to give in more complete detail the story of the war services of the vessels of the American-Hawaiian fleet and the story of the growth of this company in intercoastal trade during the seven years since the close of the European war.

Progressive Policy

The American-Hawaiian Steamship Company, throughout its history, has followed a very progressive policy in the matter of improving the design and construction of its vessels and of their propelling and freight handling equipment. It is notable in this connection that the marine engineers of this company were among the first, is not the first, to pioneer the use of oil fuel under boilers of the United States merchant marine. Experimental burners were fitted on the Nebraskan in 1903, and the experiment proved so successful that the fleet was quickly turned over to the new fuel. It will be appreciated that on this long route through the Straits of Magellan the new fuel enabled these vessels to make New York on a non-stop basis

and thus cut down materially the time consumed on the voyage.

In 1915 the twenty-six steamers comprising the American-Hawaiian Steamship Company's fleet were acclaimed by marine journals of the time as the finest fleet of freighters under one flag in the world. The aggregate carrying capacity of this fleet was 254,000 deadweight tons. It was said at that time, and can be repeated today, that

"The secret of the American-Hawaiian Steamship Company's great success lies primarily in the fact that proper tools were secured to carry out the work proposed. A fleet of splendid freighters has been built up, and these ships are fitted with the most modern and efficient machinery for the rapid loading and discharging of cargo. At all times the vessels are held to the highest standards of efficiency, being as carefully looked after in every detail as if they were the highest class of passenger liners. What is true of this company's ships is also equally true of its terminals. The wharves and docks occupied are always modern and shipshape, and the facilities for transacting a freighting business are up to the minute."

Marine Industrial Accident Prevention

THE fatality rate in shipping is two and a half times as great as that for all industries combined, Roy F. Edwards, a statistician of the Prudential Insurance Company, told the Marine Section of the Fourteenth Annual Safety Congress which met at Cleveland September 30, being equivalent to that for mines.

While the compensation cost of maritime accidents in this country is not available," said Mr. Edwards, "it is possible to quote the experience of Great Britain where stricter supervision is maintained than in this country and where conditions are somewhat similar. Among 371,000 employees during 1923 in marine and dock operations 376 fatalities were reported, representing a payment of \$395,000 at an average cost of \$1052; furthermore, 16,800 disablements cost \$1,720,000 an average of \$102 an accident. This represents an aggregate payment of more than \$2,000,000 during one year.

"Accident prevention work in our maritime industries has not, with few exceptions, been carried on to the same extent that it has in railroading, mining,

manufacturing, and allied industries," he continued. "On the western coast they are doing considerable and effective accident prevention work. The same may be said of the Lake Carriers' Association. It is interesting to note that considerable attention is being given to the subject in foreign countries. An international convention for Safety of Life at Sea will be held January 1, 1926, in England.

"At the joint maritime commission meeting held at Geneva May 18 to June 10 of this year, under the auspices of the International Labor Conference, there were discussed such subjects as conditions of work in the fishing industry, the protection of the health of seamen, statistics of shipwrecks and accidents at sea, condition of deck cargoes and safety at sea.

"Steps have been taken by the Industrial Fatigue Research Board of England to obtain sickness, accident, and exposure to risk records of 16,000 dockyard workers in England for one year with the primary object of determining how far the incidence of minor accidents is related to that of major accidents."

Rubber from the Philippines

JUDGE JOHN W. HANSSERMANN, chairman of the mission to the United States of the American Chamber of Commerce of the Philippine Islands, has been creating a deal of interest among American business men with his glowing accounts of the possibilities of rubber culture in the Philippines.

Coincident with the declarations of the Judge, United States Department of Commerce report for September estimate 1,500,000 acres available for rubber plantations in our island possessions, which would make possible 70,000 tons annual production. This report is conservative, and is based on the production work over only 500,000 acres, or one-third of the acreage available.

The American Chamber of Commerce of the Philippine figures that the surveyed lands of proved rubber production alone can eventually produce 210,000 tons per annum, or more than 65 per cent of America's

present imports in crude rubber. Other authorities, notably Director of Forestry Arthur F. Fischer of Manila and George P. Ahern, former Philippine director of forestry, agree that the Federal estimate is too low, and the latter has declared that the islands contain as much as 7,000,000 acres of rubber land.

American rubber manufacturers have been investigating the possibilities on their own account, and an official of one of the largest rubber companies states that his experts report 3,000,000 acres of rubber land on the Island of Mindanao alone.

It will be apparent, therefore, that there is possible a development of rubber plantations in these Islands that will produce all the rubber needed by the United States. Here, it would seem, is a splendid opportunity for the intelligent investment of American capital for the benefit of American foreign trade, of the Philippine people, and of the rubber tire industry.

American Shipping

A Monthly Review of the High Lights in the Progress of America's Merchant Marine, as seen from the Viewpoint of the World's Greatest Port

By SPECIAL NEW YORK CORRESPONDENT

INTRODUCTION in the new Congress of legislation curtailing the powers of the Shipping Board and delegating to the Fleet Corporation the management and disposition of the government's merchant fleet is forecast as a result of the Board's defiance of the President in ousting Leigh C. Palmer as head of the Fleet Corporation.

While the removal of Mr. Palmer and the appointment of Elmer E. Crowley as his successor have met with general approval on the part of shipping men, especially of the Shipping Board operators, who had been restive under the extension of Navy domination and discipline, this feeling is tempered with apprehension as to the possible effects of the Board's resumption of exclusive power to initiate and conclude negotiations for the sale of government ships and established lines.

Prior to the adoption of the resolution giving to President Palmer the power to negotiate ships sales, there had been many complaints of the waste of time and effort involved in negotiations with the Board, as it was necessary in nearly every case to go over the details of the purchase propositions with several members of the Board in order to insure favorable consideration when the bids came up for disposition. With the power of negotiation vested in the head of the Fleet Corporation much of the delay was eliminated, although, of course, the advantage was negated by the Board's exercise of the veto prerogative, as shown in the case of the Ford and Munson bids.

Board vs. President

It is not to be expected that the President will be content to have the Board continue in a position of such independence that it may ignore his wishes whenever it is minded to do so. Consequently the forthcoming message to the new Congress will be likely to contain recommendations for remedial legislation. In any event the matter is certain to be brought to the fore in the Senate in connection with the nomination by the President of successors to Commissioner Frederick I. Thompson, who has resigned, and Commissioner Bert E. Haney, whose resignation was recently requested by the President. It is assumed that Mr. Haney will be forced to retire from the Board.

It is a foregone conclusion that some objections will be raised in Congress against any attempt to clip the wings of the Board, especially if this involves abandonment of the present plan of regional representation. The latter factor has been singled out by the advocates of reform as one of the weakest points in the present system, and strong influences will be brought to bear on the members of both Senate and House in favor of a radical change with a view to putting the administration of the government fleet on a more business-like basis and facilitating the transfer of the ships and routes to private operation.

Reorganization Plans

It will be recalled that the recommendations of the American Steamship Owners' Association, the Pacific American Steamship Association, and the Shipowners' Association of the Pacific Coast, formulated at their conference in New York last May, favored abandonment of the regional representation plan and reduction of the membership of the Board from seven to three, these to be appointed by the President without regard to political or geographical considerations, but with regard to business qualifications, one of them to be a man who has had shipping experience. It was further recommended that this reduced Board should have regulatory powers similar to those conferred upon the Board by the Shipping Act of 1916.

The Fleet Corporation under this plan would be subject either to the control of the Secretary of Commerce or of a new Department of Marine, while the construction loan fund would be transferred to the same control and should be devoted to assisting private owners to build vessels for foreign trade and not for coastwise trade. In view of the fact that Secretary Hoover has declined to have such control thrust upon him, it is possible that some effort may be made for the creation of a new cabinet portfolio, although many shipping men are dubious as to the efficacy of such a plan.

Separation of the Fleet Corporation from the Shipping Board is also advocated in a preliminary report of the National Merchant Marine Conference formed under the auspices of the Chamber of Commerce of the United States. The report embodied the views expressed by representatives of commercial industry, farming, shipping, and other interests at a series of regional meetings held in various sections of the country for the purpose of getting definite suggestions on the best means of solving the shipping problem. Further meetings are still to be held before the conference attempts to crystallize the views of all sections in recommendations to be made to President Coolidge and the members of both houses of Congress.

Recommendations of the special cabinet committee, made public last January, also urged separation of the Fleet Corporation from the Board, the latter to be restored to its original status of a semi-judicial regulatory body and also to retain administration of the construction loan fund. The head of the Fleet Corporation under the latter plan would be selected by the President and would be subject to the control of a board of directors to be appointed by the President, presumably from among the members of the cabinet. This committee recommended, too, that all restrictions upon railway ownership of vessels engaged in international trade should be removed, a proposition which has met with approval in many quarters. It is felt by its supporters that railway ownership would solve the cargo problem and make for successive operation of American ships.

A New Jones Bill

Many features of these recommendations are expected to be included by Senator Jones in the new measure he proposes to introduce at the coming session and which is expected to remove most of the objections which have been raised against the provisions of the Merchant Marine Act of 1920. Incidentally it is understood that a campaign to induce exporters and importers in all parts of the country to give preference to American ships is under consideration by the American Steamship Owners' Association. It is felt that efforts in this direction if continued systematically cannot fail to bring good results. Such preference, it is believed, would be much more effective than a subsidy, although the association favors a graduated subsidy, according to the nature and condition of the service operated.

Postal subvention is the form of government aid meeting with greatest favor among Eastern owners and extension of this to fast freight lines has been suggested by Frank C. Munson, president of the Munson Steamship Lines. It is held by some experienced steamship operators that importance of the wage differential between American and British and other foreign lines has been over-emphasized. It is held by this faction that what is needed to put the merchant marine on a stable basis is popular support in both cargo shipment and passenger traffic and assurance of government aid in the event of unfair rate competition by foreign lines.

Passenger Tonnage Needed

Admiral Benson's suggestion for the construction of additional passenger and cargo tonnage is regarded by the majority of Eastern shipping men as a highly sensible one, especially his reference to the need for two additional vessels of about the same type as the George Washington to balance the fleet of the United States Lines. It is recognized that this fleet with the Leviathan having a gross register of 59,956 tons, the George Washington, 23,788 tons; the America, 21,144 tons, and two others of about 17,000 tons, is very badly balanced and not in a position to compete for first class passenger traffic on a basis of equality with such lines as the Cunard, with two first class liners, the Berengaria, 52,226 tons; the Aquitania, 45,647 tons, and the Mauretania, 30,696 tons, and the White Star Line, with the Majestic, 56,551 tons; the Olympic, 46,439 tons, and the Homeric, 34,351 tons.

The admiral's address before the Propeller Club in Brooklyn in which he urged the need for new speedy vessels which, in time of war could readily be converted into aircraft carriers also made a very favorable impression, as did his suggestion that the best way to aid the merchant marine would be to let the Shipping Board alone and give it a chance to develop a solution for the problem. It is hoped that his suggestions for new construction will find favor with Congress.

Such additions to the fleet, in addition to helping American shipbuilders and providing useful naval auxiliaries in the event of national emergency, would also enhance the market value of the United States Lines. As this particular service stands at present, there are only two organizations which might be regarded as prospective purchasers, the International Merchantile Marine Company and the United American Line, neither of which could hope for favorable

consideration as purchasers because of the British affiliations of one and the German affiliations of the other.

Sale Future Brightens

With American merchandise purchases by foreign countries showing an increase of 25 per cent in the first six months of 1925 as compared with the same period of 1924, and only Japan and China showing a material reduction of importations from this country during that period, it is believed that the time is ripe for American shipping to get out of the doldrums by claiming a larger proportion of the outward freight movement from this country. Consequently the outlook for purchases of additional Shipping Board services by private owners is considered very favorable.

Resignation of Commissioner Thompson removes one of the strong opponents of the ship sales plan in the Shipping Board, and may result in speeding up the disposal of some of the remaining services to private owners. With the resumption of consideration of bids it is understood that a proposition is to be made by one concern for taking over the Pan America Line in combination with the United States Lines and the American Merchant Line, operated from North Atlantic ports to United Kingdom ports by J. H. Winchester & Company. It is felt that such a combination could be operated with reasonable assurance of success in competition with the large foreign steamship passenger and cargo lines in the Atlantic trade.

H. F. Alexander on Atlantic

The advent of the Pacific Steamship Company in the New York-Miami trade with the steamship H. F. Alexander promises lively competition in that trade during the coming winter season, but it is believed by expert observers that the tourist traffic will be heavy enough to tax the capacity of all of the ships in the service. In the meantime, the Clyde-Mallory Line is going ahead with plans for the construction of two new 18-knot oil burners with accommodations for 780 passengers each, and of such shallow draft as to enable them to dock at Miami, whereas the H. F. Alexander by reason of her deep draft, must transfer her passengers to a tender outside the harbor mouth. It is expected, however, that her speed will more than make up for this handicap. She will make the passage from New York to Miami in forty-eight hours and, will make two trips a week.

Canal Measurement

Legislation providing for a single system of measurement of vessels passing through the Panama Canal is to be advocated by the American Steamship Owners' Association. A series of meetings has been held at which the subject has been discussed by representatives of the lines using the canal, and Col. M. L. Walker, Governor of the Canal Zone, has promised that the recommendations shall receive careful consideration. The recommendations, of course, will contain a proviso that the tolls shall not be increased under the new plan. The bill for a single system of measurement which was introduced in the last Congress was held up in the Senate because of the objections of steamship owners to the proposed rate of \$1 a ton, which would have involved a heavier charge on most of the general cargo steamers using the canal.

South Pacific Shipping

Special Correspondence from Sydney

THE whole of Australasia is affected by the strike of seamen on British ships, who are protesting against the reduction of their wages by five dollars a month. There is no possible chance of this strike affecting the local lines, which are paid at rates which are double the British one. The hold-up of the overseas steamers has not been an ill-wind for the American boats, as on two occasions the Oceanic steamers have been asked to carry British mail owing to the lack of sailings by the other routes.

This impresses upon us the fact that in years gone by, when the Pacific Mail Steamship Company was at its zenith, and later when the Oceanic and Union lines ran the mails, the San Francisco route was regarded as the fastest for mails between Great Britain and Australia and New Zealand. Since then the mails have been spread over a variety of routes, upon which some very fine steamers ply.

Though it may seem strange to people in America to say so, these splendid steamer lines via the Suez Canal, Panama Canal, Cape of Good Hope and India are serious rivals to the trans-Pacific lines. For every year thousands of travellers make voyages to Europe without ever seeing the United States or Canada, simply because the excellent services on those routes have appeared superior to those on the Pacific. It is the failure of these lines, owing to the present strike, which has brought home to Australians the fact that there are equally good services on the Pacific, on which, too, the Australian and American rates of wages are paid. Probably the advertisement thus given these lines will not be forgotten.

The Old Pacific Mail.

It must be admitted that not many people in this country remember the Pacific Mail Steamship Company and its early services to New Zealand and Australia, when the Nebraska, Nevada, and Dakota ran a monthly mail service across the Pacific. But many know of the old company and have expressed regret at the passing of the firm and its historic name. This, no doubt, is an instance of the difference between the British and American methods. Such a name, dating from 1848, would have been preserved at any cost in a British country. The only older line in the Pacific is the Pacific Steam Navigation Company of Liverpool, which started services to Chile from Liverpool in 1840, and its name is preserved for the service, though the West Indian Royal Mail Line is really the owner.

The news that the Pacific Mail Steamship Company's service is now to be known as the Panama Line is more than interesting to Australians since the shipping line which is remembered by that name here is the one which ran from 1863 to 1866 under the flag of the Panama, New Zealand, and Australian Line, with the screw steamers Rakaia, Mataura, Kaikoura, and Ruahine, vessels of 1500 tons.

Shipping of the Pacific

It is time the whole of the shipping interest of the Pacific got together, for on this ocean a special set of circumstances may arise, and since most of the shipping here is operated under conditions of wages and hours unheard of on other seas, there is no doubt that unusual factors are at work. The recent change in

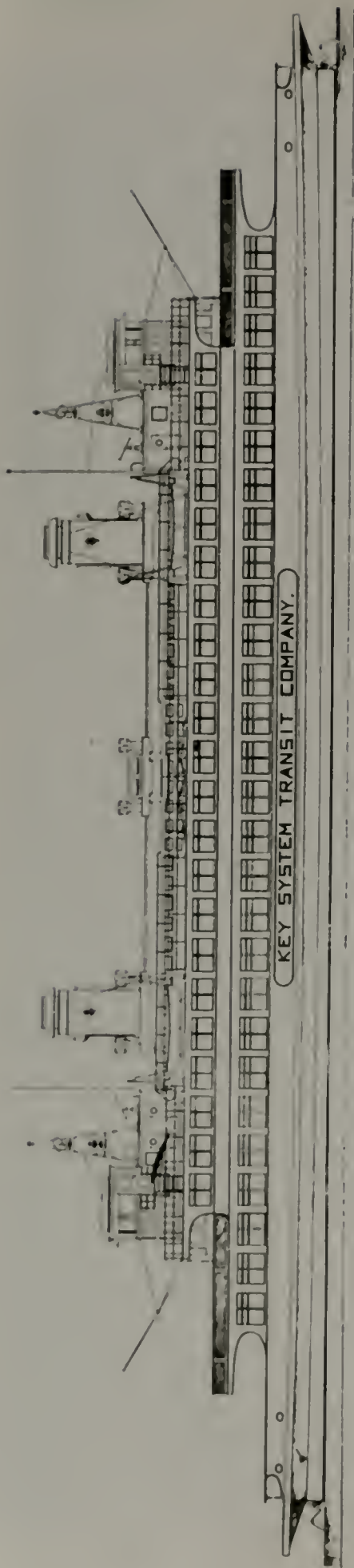
itinerary of the Oceanic Steamship Company, under which a call is made at Suva, was a bold step, and one which was calculated to cut into both the San Francisco and Vancouver traffic of the Union Steamship Company. That it has done neither of these things prompts the question, "Where's the extra traffic of the Oceanic Company coming from?" The answer is that it has been created by the new service. The Union Line's service via New Zealand was a round-about way for Fiji business people to reach Sydney and for Sydney holiday makers to reach Suva, and it cost \$25.00 more by the direct route of the Oceanic Line. As for the San Francisco services, the added attractions of the call at Suva have not induced enough traffic to desert the Union Line's route via Tahiti to make much difference, while the fact that the Oceanic Line does not call at New Zealand is really a factor which keeps the two services very much apart.

South Seas Exhibition

Special services are to be arranged between Australia and New Zealand for the New Zealand and South Seas Exhibition, which will open in November. Two or three extra steamers will be put on the route across the Tasman Sea to carry the tourists who will want to see this second Wembley in the most southern possession of the British Empire. No doubt to Californians this will seem like talk about an unknown land, yet it is territory in which many will now be interested since the visit of the American Fleet was so marked a success, and the officers and men had such good times in the two lands which are separated by the 1200 miles of the Tasman Sea. The Union Steamship Company will have a new fast steamer, the Tamahine, of 2500 tons, running for the occasion to connect the two islands of New Zealand. This vessel has reciprocating engines and a speed of 17 knots, with accommodation for 700 passengers. She was built in Scotland. No doubt many Americans will travel across the Pacific to New Zealand at the time of the exhibition, since it will be summer in New Zealand, a season like the Indian summer in the United States.

Shipbuilding in Australia

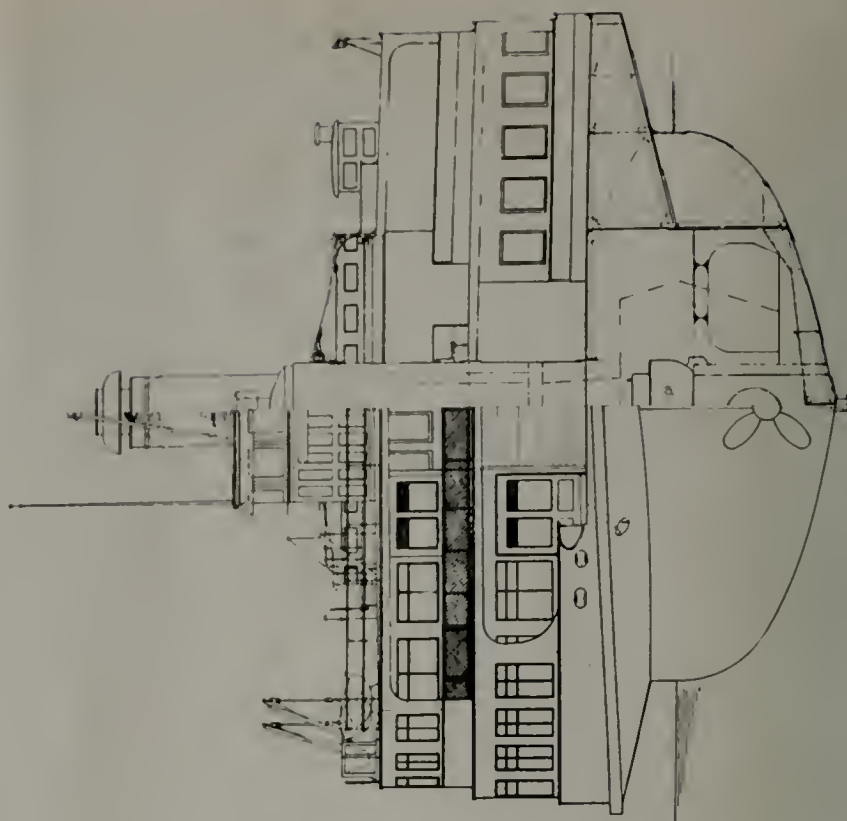
Within the past two years some fine ships have been built at the government shipyards in Australia. The only trouble has been the high cost compared with what can be done in British shipyards. Two 12,000 ton overseas ships, the Ferndale and Fordsdale, were built at Cockatoo Dock, and have done good work in the service of the Commonwealth Government line. In spite of these facilities, the Sydney Ferries, Inc. a year ago sent to England for a traffic transfer ferry for service in Sydney Harbor, the reason being that a saving of \$40,000 would be effected. This vessel, the Koondooloo, is now in service and can take 100 automobiles every trip. Now the ferry company has called for tenders for the construction of two more ferries of this type, giving Australian and British or American builders equal chances. The high cost of bringing the vessels from either of the overseas countries is likely to result in both contracts being let in Australia.



Proposed New Key Ferries

Length over all	276'0"
Length between rudder posts	256'0"
Length between perpendiculars	256'0"
Breadth over guards	70'0"
Breadth molded at sponsons	47'0"
Depth of hold	18'4"
Depth molded	21'0"
Sponson overhang	11'6"
Normal light displacement	1754 tons
Normal light draft—keel	13'7 1/2"
Normal load displacement	2015 tons
Normal load draft—keel	14'9 1/2"
Deadweight capacity	261 tons
Passenger capacity	4000
Seats	2340
Normal S. H. P.	2250
Maximum S. H. P.	2600
Speed (Normal S. H. P.)	14.5 knots
Speed (Normal light displacement)	15 knots
Speed (Maximum S. H. P.)	200
Speed (Normal light displacement)	228 tons
Propeller Revolutions (Normal S. H. P.)	153 tons
(Normal light displacement)	18 tons
Capacity fuel oil	152 tons
Capacity—fresh water	102 tons
Capacity—stores	12 tons
Normal fuel oil—2/3	60 tons
Normal fresh water—2/3	
Normal stores—2/3	
Capacity trimming tanks—each	

The normal light displacement is defined as the vessel fully equipped and manned; ready for service; all boilers in operation; two thirds water, fuel oil, and stores; and no passengers. The normal load displacement is the normal light displacement plus 4000 passengers.



The New Key Ferries

Two Splendid New Passenger Ferries Designed by Hibbs, McCauley and Smith to be Built at a Pacific Coast Yard for the Key Transportation System

HIBBS, McCAULEY & SMITH, naval architects of San Francisco, are certainly to be congratulated upon the production of the design for the new Key Route ferries. The external appearance of these boats, as indicated from the outboard profile reproduced herewith, certainly indicates that the finished product may properly bear the epithet of thoroughbred. Every line shows careful consideration of proportion, and the finished result is very pleasing to the eye.

The ideal ferryboat should possess certainly well-defined characteristics, obviously, the most important being that of safety. The safe transportation by water of thousands of commuters daily between San Francisco and the trans-bay cities demands that the boats be as free from fire hazard and from sinking as it is humanly possible to make them. In addition to safety, there appear, in the order of their importance, the following desirable characteristics: Reliability, comfort, economy, and appearance.

Briefly, it is proposed in this article to discuss the various features which have been incorporated in the design of the boats which individually and collectively serve to give the boats the above necessary and desirable characteristics.

Safety

Freedom from fire hazard is provided by the use of steel as the construction material for essential members. Hull, bulkheads, bulwarks, and decks are of steel. Wood appears only in the teak seats for the passengers, and in the teak pilot houses. Sheathing, where provided, is of approved fire resistant material. Fire extinguishing appliances comply fully with the requirements of the law and of the classification societies, as do also all other items of design and construction.

Fuel tanks, built integrally in the hull, are subdivided so as to be located opposite the fire rooms. There are two fire rooms separated from each other by the engine room. Fuel tank groups are separated from each other by fresh water tanks and the usual coffer dams.

The hull is divided into seven main water-tight compartments by six main athwartship water-tight bulkheads. These compartments are, respectively, No. 1 ballast tank, No. 1 motor room, No. 1 fire room, engine room, No. 2 fire room, No. 2 motor room, No. 2 ballast tank. There are also two longitudinal wing water-tight bulkheads extending from No. 1 motor room to No. 2 motor room, and between these bulkheads and the skin of the ship are located the fresh water tanks and the fuel oil tanks. Thus located, the tanks furnish a double hull along the major portion of the boat's length on each side. Inasmuch as the hazard of collision is far greater than that of stranding, this double hull adds greatly to the security of boat and passengers.

In addition to the underwater hull subdivision, the design calls for another feature that will contribute greatly to the safety of the passenger. This feature consists in supporting the overhung main deck by water-tight plating rather than by a row of stanch-

ions. A watertight sponson extending around the entire main deck is thus formed, whose sole function is to provide a reserve of buoyancy. The buoyancy thus provided is sufficient to float the ship even though the entire underwater hull spaces were flooded. Incidentally, the sponsoned boat has a better appearance than the stanchioned boat—a result in this particular case that is of secondary importance.

Steel construction, water-tight subdivision, and the buoyant sponson—these items can be successfully relied upon to furnish an unsinkable, unburnable ferryboat.

According to careful calculations, the stability of the boat—its ability to maintain an upright position—under the worst conditions of loading, is ample, and exceeds the legal requirements. A measure of its actual stability will be determined by a trial to be conducted by the U. S. Government representatives before the vessel is delivered by the shipyard.

Reliability

Reliability of service is directly measured by the reliability of the propelling apparatus and of the steering mechanism. The inherent reliability of the turbo-electric form of propulsion has been demonstrated to the satisfaction of public and owner for a period in excess of two years. The record of the boats so propelled is such as to expect a similar satisfactory performance from the new design. The relation between power required in the design and power furnished provides a comfortable margin, and duplicate installations of essential auxiliaries have been provided wherever practical. Boiler power is furnished by four similar water-tube boilers; their size is such that the normal speed can be maintained by the use of any three boilers.

Instantaneous control of the speed of the boat by the captain is made possible by the installation, in each pilot house, of pilot house control. By this means, the captain controls the direction and speed of the propellers directly from his pilot house, although a duplicate control station is provided in the engine room, as are also the usual engine room telegraphs. The ability of the captain instantaneously to control the speed and reverse the screws of the boat contributes materially toward safety in navigation, ease in manoeuvring, and speed in making the ferry slips, each of which is a desirable characteristic.

The turbine electric system of propulsion consists of a steam driven turbine connected through reduction gearing to a generator; the current thus generated is distributed to two motors, which are respectively connected to the propeller shafts and drive the propellers. The use of comparatively high steam pressure and superheat, together with a high condenser vacuum, permits an economical fuel consumption. Boilers and their fittings, turbine, generator, motors, and auxiliaries are all of the most modern type. Reliability has not been subordinated to economy either of first cost or operation; wherever permitted they have been combined.

As is necessary and customary in all double-ended ferry-boats, a rudder is fitted at each end of the ves-

sel. In this case, two separate, duplicate steering mechanisms, each mounted near its respective rudder, are provided. The control for each rudder is taken to each pilot house. Normally, the captain will use No. 2 rudder for steering the ship when he is at his station in No. 1 pilot house. Both steering mechanisms and controls are maintained instantaneously available; both rudders may be used simultaneously, if desired. The steering gear arrangement objectives were two in number; first, to furnish instantly a spare steering ear, should the one in use experience a casualty; and second, to provide the captain with a bow steering rudder for use in making his landing in the ferry slip. The designed arrangement attains both objects, adding materially to safety reliability, and despatch.

Comfort

A discussion of the comfort of the ferry passenger of today leads far afield. Proper design, honest construction, and ability of operating personnel all contribute to a sense of safety without which no real comfort can be experienced. But the modern commuter demands more than a sense of security. He demands comforts today that would have been considered luxuries yesterday. And so there are a number of features incorporated in the boat having for their purpose nothing more than the comfort of the passenger. The benches themselves may serve as an example of the time devoted to this particular item. Several full-sized models of varying dimensions and contours were actually constructed, and hundreds of people—short, fat, thin and tall—sat in them; and the model that received the greatest amount of commendation was the one selected. Ventilation and light as provided will be ample. The modern standards of illumination have been utilized, and every occupant of every seat will receive an amount of illumination on the page of his book or daily paper that is at least equal to that recommended by the technical research societies. So the passenger will be comfortably seated, in a ventilated spot, with ample light.

The toilet room for men is located outboard, amidships, on the main deck; that for ladies is on the upper deck. Both are provided with hot and cold running water in the lavatories, in addition to the usual toilet accommodations. In the ladies' compartment a room is fitted up separately as a rest room, with upholstered chairs, davenport, and tables. Drinking fountains are provided on each deck supplied with ice water that has been chilled by a refrigerating machine.

No discussion of the comfort features of the boat would be complete without reference to the restaurant. The Key Route restaurant service has always been very popular, and in the new boats the facilities for increased service will be noticed. Located on the main deck, outboard, amidships, it will be found well lighted and ventilated; sanitary to the highest degree; comfortable; of inviting appearance; and designed so as to serve quickly the large number of commuters who enjoy their meals during the running time of the passage. Many details are the result of the experience of the commissary department of the owners, whose experience with the "eating commuter" has been so vast and so mutually satisfactory.

Seating facilities outside the deck houses will be sufficient for a large number of passengers who prefer to sit outside. The steepness of the stairs from deck

to deck has been reduced below that which is ordinarily found. Life boats are carried on the hurricane deck. This provides an uncongested area in which the deck hands can work, away from the passengers, when it becomes necessary to lower the life boats.

The capstan has been removed from the lower deck, forward, and this portion of the deck is now free from all obstructions. Upper deck supporting stanchions are eliminated by use of steel cantilever construction at the ends of the deck houses.

The operating personnel has not been overlooked in the matter of comfort. Captain and officers are provided with individual state rooms, bath and toilet facilities on the hurricane deck. Aft one pilot house is a rest room with comfortable furniture, a transom, and a desk. Access to this room is gained by a ladder within the upper deck cabin enclosure. Deck force, engineers, and steward's department are given bunks, rooms, lockers, baths, etc., in accordance with the requirements of their rank and work.

Economy

Inasmuch as the charges permitted by a ferry company in California are regulated by the State Railroad Commission and based upon capital invested and operating expenses, it will be readily seen that the item of economy is worthy of attention for the passenger, as well as the owner. The attainment of the highest degree of economy in construction is dependent in its entirety upon the skill of the designer and of the shipbuilder. The good designer can obtain the results desired by the utilization of standard steel shapes, thus permitting a reduction in the construction costs; the shipbuilder can decrease the cost of construction on his part by the utilization of modern machinery, capable workmen, and careful supervision.

In the design of these vessels, a great deal of thought has been given to the idea that the design must lend itself easily and readily to the most economical method of construction, without the sacrifice of safety or reliability.

Operating expense is directly dependent upon the efficiency of the various mechanisms combined with the skill of the operating personnel. As designed and specified, the power plant will permit of the realization of a high degree of economy in which, however, safety and reliability have not been subordinated.

The actual power required to propel the boat at a speed sufficient to maintain the operating schedules also depends upon the skill of the designer. The lines of the vessel, its relative proportion and coefficients, and the design of the propeller all enter into the problem of power, as related to speed.

A model of the new boat was run in the model tank of the University of Michigan at Ann Arbor. The results of these model tank trials confirmed the pre-trial calculations. The result has been a form of hull that is very easy to drive. The trial results of the new model, as compared with the actual performance of the smaller ferry, indicate that the new and larger boats will maintain the present operating schedule with an actual expenditure of power of only 93 per cent of the smaller boats' requirements. In other words, the 1750-4000 passenger boats will make the same speed as the 1280-2100 passenger boats on 7 per cent less power. In addition to this, the larger boat will be capable of maintaining a speed 25 per cent greater than the smaller boat, thus affording an oppor-

(Continued on page 505)

There She Blows!

Some Experiences in Whaling North of Seventy in the Early Eighties

Installment II

BY SEA FLAME

IN the early spring of 1894 the whaler *Narwhal* sighted the low-lying coast near Holy Cross Bay, well up in the sixties, north latitude. She had worked over from Unimak Pass, taking several weeks on the run owing to heavy ice fields. The trip was, however, eventful. The crew had gotten down to regular ship work, and frequent boat drills had made them quick and proficient in handling the small craft, which, in those days, were used to capture the whale. Bowhead whales were the objective, and no attention was paid to fin-backs or sulphur-bottoms, except for practice. While the latter two are as a rule much larger than the bowhead, this animal was valuable for its whalebone, or baleen, much used then as material for stays in ladies' wear, and also to make the famous horse-hair cloth of long ago.

Quite a number of whales were sighted in the open spaces between the ice fields, but none of the bowhead sort. The older hands can readily distinguish them by the shape and height of the blow. The blow of a whale, by the way, is not water, but the steam from the warm air thrown out by the animal when it comes up to breathe or blow. And the whalers do not shout with stentorian voice, "There she blows!" but rather in a very low tone cry or sing very slowly, "Ah-h-h Bl-o-o-w," long drawn out and hardly loud enough to be heard from aloft. But the hail means a quick getting ready of the boats, a stoppage of the main engines, if they are running, and all lowering of boats and getting away as quietly as possible to avoid "gallieing" the whale, which is a very scary bird at best. Practice was making the boat's crew perfect, and a promise of a bonus of five pounds of tobacco from the slop chest for the man who first raised a bowhead falling a prize to the ship kept keen eyes alert.

First Bowhead

The days were warm and sunny, with a sea as smooth as glass between the vast stretches of floating ice, which, covered with snow, made a glare and brilliant reflection severe on the eyes. The days were also commencing to get longer and longer. Our provisions were agreeably supplemented by fresh fish and young seal. The wild birds were only sea-gulls as yet, but later we were assured ducks and geese in plenty. Soon after sighting the bleak shores of Siberia, one of the lookouts gave the cry, "Ah-h-h-h Bl-o-o-o-w,"

followed by "and she's a bowhead." The engines, running slow at the time, were stopped at once. The captain scrambled up to the crow's nest in a hurry, and all boats were rapidly manned and lowered away. The oars were quietly dipped and, as soon as the ship's side was cleared, masts and sails were set, a light breeze being favorable.

If there is a breeze, so much the easier to get near the whale, as then the approach of the boats is silent. The engine room force had already been taught the need of perfect stillness, and no using of slice-bar or shovel was permitted. If any coal was required in the furnaces, it was thrown in by hand, as the firemen were as anxious to make a killing as anyone else, since their wages depended on the catch. The captain, steward, cook, and the four of the engine room crew were all that were left on board. The captain signalled from the crow's nest the location of the whale, and as we had jib, fore and main top-sails, and spanker set, she was headed in the direction taken by the boats, but not making the time these light craft did. Soon the mates on the six boats sighted the quarry and formed the boats into a crescent shaped line, about three hundred feet apart, and all headed for the animal, which was evidently a female feeding, with a calf along side. Rapidly the boats came up to the huge bulk, now hardly submerged, the mother whale going along slowly, with the calf nosing about her.

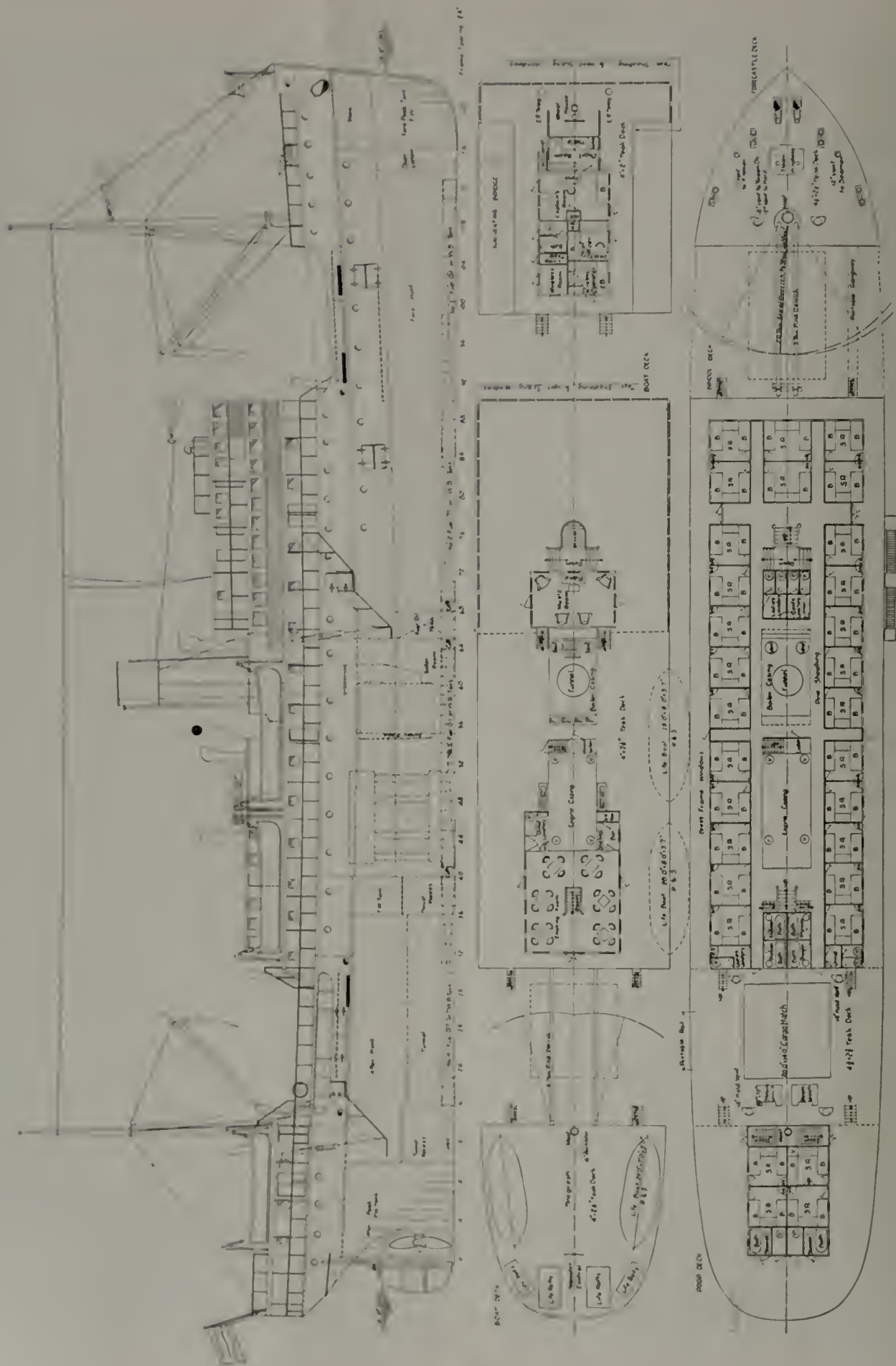
First mate's boat neared quickly, the sails being aided by paddles. In the bow of the boat was the boat-steerer, whose job it is to strike the whale. His weapon is a harpoon or iron, as the whalers call it. Back from the harpoon end this was fitted with a short heavy gun-barrel and an explosive bomb, in which was a firing charge that would shoot into the whale when the iron entered the carcass. An arrangement of triggers the bomb into the body, where it blew up, tending to paralyze and even kill the whale at once.

This particular bowhead was either tough or the bomb did not reach a vital spot, for she at once "turned flukes" and sounded. However the depth was not great at that point. The boat steerer, as soon as he had made the strike, clambered aft to take the steering oar, while the mate was clawing his way forward to

(Continued on page 30, Adv. Sec.)



Fur Traders and their schooner in the Arctic ice.



Onboard profile and deck plans of the new Philippine inter-island steamer, designed by Albert W. Lawson for Ynchausti & Company of Manila.

New Philippines Steamer

Albert W. Lawson of San Francisco Designs Combination Freight and Passenger Steamer for the Inter-Island Trade of Ynchausti & Company, Manila

YNCHAUSTI and Company of Manila, Philippine Islands, have for many years been favorably known on the Pacific Coast for the quality manila rope which they ship to the United States. It is therefore a matter of great interest to Pacific Coast exporters and importers that this firm, needing a steamer for its large and growing inter-island trade, should come to San Francisco for plans and construction. This is the finest kind of commercial reciprocity, and we appreciate it.

Ynchausti & Company recently instructed Albert W. Lawson, marine engineer and naval architect of San Francisco to prepare plans for a combination freight and passenger steamer. These plans have now been completed and bids are being prepared by San Francisco Bay shipyards. Competition will be keen, undoubtedly, and we shall see some rock-bottom figures.

The plans and outboard profile reproduced herewith show the general arrangement of this vessel, which will have the following characteristics:

Length over-all.....	260 feet
Length between perpendiculars	241 "
Beam	40 "
Depth, molded	20 "
Draft, loaded	15 "
Displacement	2975 tons
Deadweight cargo capacity	1200 "

As will be noted from the profile, this vessel will be of the modified three-island type, with raised fore-castle and a combination bridge and poop deck. On this bridge and poop deck she will carry accommodations for 60 first-class passengers in two houses. This deck will be laid in teak, as will the boat decks above

both houses and the navigating bridge deck. On the boat deck, above amidships house, are located a smoking room aft, and a music room forward. The whole forward end of this deck, including the music room, is enclosed front and sides in a sheathing of teak, with vertical sliding windows, making a fine roomy enclosed promenade or well ventilated ball room. The dining saloon is on the main deck, as are quarters for all the engine room and most of the deck officers. The captain, chief officer, and wireless operator are quartered on the bridge.

Forward, the hold has a tween decks space, but aft it is entirely open. The tween decks cargo spaces are served by four generously proportioned side ports. Forward and aft the cargo hatches are as large as is consistent with structural strength. There are four steam cargo winches, with four 5-ton pine booms and one 20-ton steel boom.

The power plant consists of two Scotch type marine boilers, fuel oil burning, with three furnaces. These boilers will supply steam at 180 pounds pressure to an 1800 horsepower triple expansion engine, driving a single screw, to electric lighting sets, and to engine room and deck auxiliaries.

The arrangements for passengers, freight, and machinery spaces are excellent. The rooms will all be well ventilated and will be equipped with fittings and furnishings to insure the greatest comfort in the tropics. The hull and machinery are designed and will be built to comply with Lloyd's highest rating and with the rules of the United States Steamboat Inspection Service.

New Key System Ferries

(Continued from page 502)

tunity of cutting down the running time of the boats, should a new schedule be deemed advisable.

Appearance

The external appearance of the boat is very pleasing. There are two smoke stacks symmetrically placed on the fore and aft line; and the use of a steel tripod mast abaft each pilot house for carrying the range lights, search lights, and fog lights is something new in ferryboat construction. Length, breadth, height, and sheer have been so combined as to give the vessel a long, low, and speedy appearance. The owner's emblem in colors is affixed to each stack. The double line of carefully proportioned windows gives promise of adequate light, vision and ventilation.

All interior finish will be in white. This, with battleship linoleum floors in the main deck cabin, and with interlocking rubber tile in the upper deck cabin and the natural teak seats, will present a very artistic and pleasing contrast which will be enhanced by the semi-indirect illumination system adopted. Spacing the two stacks widely gives opportunity for a large, beautifully proportioned cabin dome on the hurricane deck.

The dome interior is lighted by the cove, indirect lighting system, the light globes themselves being not visible. Stained glass windows featuring marine subjects are placed at intervals in the dome.

The absence of the usual unsightly bins for the stowage of life preservers is a noteworthy feature. These bins of wood grating construction, with their lanyards and toggles, have always been considered a necessary evil, although detracting from the interior appearance of any ferryboat. The designers have constructed steel trunks underneath the upper deck seats for the stowage of life preservers for the main deck passengers; the bottoms of the trunks are opened by accessible polished brass levers, thus dropping the preservers to the main deck. For the upper deck passengers, two fore and aft trunks have been built underneath the hurricane deck gangways, port and starboard; and the life preservers for the upper deck passengers are stowed in these trunks. Brass levers cause the bottoms of the trunks to open down, thus dropping the life preservers in the gangways below. Nothing is lost in accessibility or preservation of the life preservers by this method; but a great deal is gained in general appearance.

Isherwood Bracketless System

FEW details of construction are so subject to expert design and supervision as those entering into the framework of a ship's hull. Here we must have maximum strength and rigidity combined with flexibility and what might be termed floatability. Many radical propositions have been advanced at different times involving revolutionary departure from the standard method of ship design. The great majority of these propositions have failed to stand the test. The Isherwood system, however, has in the past twenty years so demonstrated its usefulness that in vessels for certain uses it has become, itself, the standard and the old basic ship structure has become the exception.

The inventor of this longitudinal system, Sir Joseph Isherwood, is now startling the world of naval architecture by another patent (British No. 223,299) in which he advances a design that secures strength and stiffness without the use of the brackets connecting frames and bulkheads.

"Fairplay" for April 30, 1925 carries a description of this system, from which we quote below. We hope in the near future to carry the full plans of a tanker built after this new method.

"By a drastic alteration of the internal arrangements of the hull, Sir Joseph Isherwood has successfully demonstrated in the construction of many hundreds of tankers how a considerable quantity of steel can be saved, as compared with the transverse method, and at the same time a great increase in the strength of the vessels be brought about. Pursuing his investigations a step further, he now proposes by another ingenious modification to show how this can still be done and the construction simplified. Sir Joseph's present proposal, which at first blush seems audacious, is to eliminate the corner brackets in the tanks. It is an accepted fact that the most fruitful source of trouble in the transversely framed oil tanker—and, incidentally, the chief item in the repairs and maintenance account—has been the utter impossibility of maintaining sound bracket connections to the bulkheads which would do what was intended of them and avoid leakage.

"Sir Joseph Isherwood, in the development of the tanker on his system, greatly minimized, if, indeed, he did not almost eliminate this difficulty, and practically suppressed the leakage; but it cannot be gained that he only achieved this at the cost of great expense, which was, however, considerably more than counterbalanced by the other large economies effected. Sir Joseph's present proposal goes a step better by obviating any possibility of leakage at the bulkhead bracket connections by leaving out the brackets, and, as this can be done without in any way disturbing the continuity of longitudinal strength in the structure, it certainly should be most efficacious. Anyone familiar with the interior of the tanks, and looking at the number of brackets—which are so tedious and expensive to fit—connecting the longitudinal stiffeners at the sides of the ship to the horizontal stiffeners on the transverse bulkheads, and these transverse bulkhead stiffeners to those on the longitudinal bulkhead, will readily grasp the appreciable simplification in construction which is being effected, the resultant decrease in labor costs, and what it means to the ship in upkeep and maintenance.

The corner brackets are eliminated from each tank

by stopping the longitudinals at the sides of the ship and at the middle line bulkhead short of the transverse bulkheads and supporting them by the transverses at the sides and the webs on the longitudinal bulkhead, dealing in the same way with the horizontal stiffeners on the transverse bulkheads. This is done by an ingenious disposition of materials and scantlings. The spacing of transverses and sizes of longitudinals are so arranged that the strength of the longitudinals projecting beyond the transverses, and which are not connected to the bulkheads, is the same as the strength of the longitudinals between the transverses. The ends of the longitudinals and horizontals are treated as beams, the end portions of which, projecting beyond a transverse or web, are fixed at the transverses or webs, and are not fixed at the ends; i. e., not connected by brackets, which have been dispensed with, though the strength of the projecting portion will remain substantially the same.

"There are, of course, many other details connected with the idea, but the foregoing explanation embodies the broad principles. Practically all inventions of value and outstanding merit are simple when one knows how it is done. The Isherwood system was a revolution on the methods existing when it was introduced, and was simply a more scientific distribution of material over the hull of a ship, perfectly obvious when once it had been demonstrated. The present invention, which, for want of other term, might be designated the bracketless system, is equally simple, and looks to be equally obvious."

A Help for Engineers

Engineer's Log. The old fashioned engineer's log book of the days of low pressure reciprocating engines and coal fuel has been found to be incomplete for the modern marine power plant. Noting this fact, Millard R. Hickman efficiency engineer for the Matson Navigation Company, began an analysis of the data necessary for complete check on engine performance, and after a great deal of time devoted to the problem brought out a most complete and comprehensive Engineer's Log.

This book is remarkably perfect in the arrangement of spaces for observations on single screw, twin-screw, reciprocating, direct and geared turbine engines. Spaces are provided for proper recording of performance of dynamo and refrigeration machinery. All the particulars of quantities of fresh water, fuel, lubricating oil can be seen at a glance. Ratios of cut-offs and nozzle arrangements are easily noted. The regular entries of pressures, distances run by wheel or ship, revolutions, and draft are all placed in fine relation to each other. All this information is so arranged that the several items are in no way crowded or obscure. Neither is the book too large or unwieldy. It is also arranged for civil time, spaces being given for change of time and also for the entry of such memorandum as may be necessary. In addition there are graphs covering data necessary in correcting temperatures for fuel oil densities and weights; brief, but excellent test suggestions; rules and standing orders for engineers.

The whole should be welcomed by the modern chief engineer as a marked improvement on the old style log. The book is printed by the Abbott Press, San Francisco.

Marine Oil Engine and Motorship Progress

Diesel Lubrication Problems

A Few Notes on the Practical Handling of Lubricating Oil on Diesel Plants at Sea

By Robert C. Pairman

SO LONG as the reciprocating steam engine held the field as a power producer, drip lubrication, though somewhat crude in its methods of application and sometimes imperfect in the results achieved, was a comparatively simple problem.

With the advent of the steam turbine and the necessity for forced lubrication, problems arose which were unthought of by the earlier users and manufacturers of lubricating oils. The diesel engine brought with it still further problems to be solved.

One essential requirement of an oil for use in a diesel engine is that it be nonemulsifying. The oil best fulfilling this condition is one of the nonacid, straight mineral variety. Now, an oil that may fulfill the above requirement when new may not do so after continued use, for the following reasons:

1. There may be particles of carbon in the oil.
2. The oil may have become oxidized on account of continued use.
3. The oil may have become emulsified.

Carbonization

Carbon is found chiefly in trunk piston engines, due to the fact that the bottom end of the cylinder is open to the crankcase, and also to the fact that oil becomes carbonized on the under side of the hot piston crown from splash and slack gudgeon pin bearings. After accumulating for some time, the carbon becomes detached and contaminates the lubricating oil. Carbonization is not likely to cause very much trouble in a four stroke crosshead type of engine, in which the crankcase is entirely separate from the cylinders.

Oxidation

Oxidation occurs on all types of engines and is due to the gradual absorption of oxygen. It becomes evident by the presence of a brownish sludge, if the oil is left undisturbed for some time. It will be readily appreciated that the conditions inside a crankcase are very conducive to oxidation. In the first place, the interior is fairly warm and is full of oil fog caused by the oil being in a finely divided state, partly due to the temperature and partly due to mechanical causes. The oil is constantly being forced out from between the bearing surfaces in what really amounts to a pulverized state. There is thus a very large surface of the oil exposed to the attack of oxygen.

Emulsification

One very frequent cause of emulsification of oil in diesel engines is the fact that, owing to the presence of water on the walls of the compressors, it is necessary to use a compound oil which will not be washed away; in fact, an emulsifying oil. Portions of this compound oil find their way into the crankcase. An emulsion, once started, soon builds up.

Particles of solid matter assist in the formation of an emulsion, as they appear to act as a base for the

absorption of moisture. Emulsions formed in a carbon charged oil are as a rule more difficult to deal with than those in an oxidized oil. This is probably accounted for by the fact that carbon is much more difficult to settle out than particles of oxidized oil. Oxidation can, however, be a very real danger due to the fact that it settles easily and is thus liable to choke oil pipes, with disastrous results. So long as the oil is kept stirred up the oxidized particles do not appear to have a very detrimental effect on actual lubrication, as they are of a greasy nature. Of course this applies only when the amount of oxidation is kept within reasonable limits.

There is a peculiarity with regard to oxidation which must be particularly guarded against. For a considerable period in the life of the oil, it retains properties which cause the precipitation of the oxidized particles, but latterly the oil loses these properties and actually absorbs the particles, so that there is more or less solid matter suspended in the oil which will not settle. If, now, a quantity of new oil be added to the old oil, there is liable to be rapid precipitation, on account of the precipitating qualities of the added oil. An engineer can easily make a practical test for himself to see the state of his oil. Take a sample of oil from the system and settle it well. Then take equal quantities

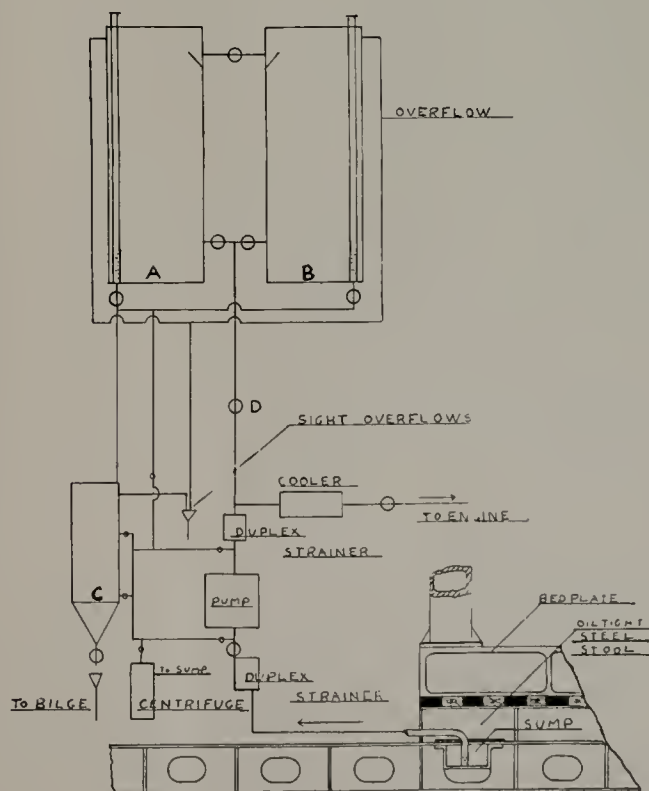


Diagram showing the proposed method of handling lubricating oil on motorships.

of settled oil and unused oil, and shake them together in a test tube; allow to settle; and observe the amount of precipitation and the time it takes to come down. A test with petroleum ether instead of new lubricating oil added to the old oil gives more decided results.

Correction

Filters, or more correctly, strainers, are of no use for dealing with emulsions or suspended matter, but are necessary in order to prevent foreign substances reaching the bearings. The means used to keep the oil in good condition are chiefly settling and centrifugal purification. A combination of the two will be found most effective.

In very small plants, where there is not much oil in circulation, a centrifuge might be able to cope with the matter alone, but in large plants, where the amount of oil in circulation is considerable, settling tanks become a necessity in order to lighten the duty of the centrifuge. In stationary plants, shallow tanks would no doubt be most effective, but at sea, tall cylindrical tanks have been found most effective on account of the motion of the ship. A suggested semi-gravity system is outlined in the diagram.

Proposed System

Two elevated tanks are provided to be used alternatively, the oil in the tank that is out of use to be allowed to settle for the length of time that has been found from experience to be the best; then the dirtiest of the oil, which will have settled to the bottom, to be run into the tank C, from which water and heavy sludge are passed to the bilge. After treatment in tank C, the oil is passed through the centrifuge and back to the system. Between times, the centrifuge is to be kept continuously on the treatment of oil by-passed from the main circulation.

A sump, as shown in the sketch, is located at the after end of the engine to obviate the necessity of carrying a large amount of oil in the crank case. The less oil carried in the system the better. It is also desirable that this quantity be kept as constant as possible, and that the make-up oil be added regularly at the same rate as the oil in the system is used, to avoid the possibility of sudden precipitation. The system shown in the sketch could quite easily be converted to a pure pressure system by closing the valve D. When the engine is stopped, the tanks A and B should be of sufficient capacity to hold all the oil from the crank cases. Sheet steel pans are sometimes fitted under the engines to catch the oil, but these cannot be recommended because of the liability to leakage.

As the engines usually sit on built-up steel stools, it has been suggested to omit the lightening holes in the plates and to use the space in these stools for collecting the oil. The spaces between the cast iron chocks separating the bedplate and stool would have to be filled up with wood to exclude dirt, and a good-sized manhole door provided close to the suction sump for access at any time.

In the diagram, it will be seen that the pipes for draining off the oil from the tanks A and B to the tank C are perforated at the bottom and extend to the tops of the tanks, protruding through the tops with the ends plugged. This arrangement is to allow of a tube brush being passed down the pipes in the event of the holes at the bottom getting choked with sediment. From the diagram, it will be seen that the oil can be pumped the reverse way if desired; that is, from the pump into the perforations. Also, the oil in the tanks

A or B can be used to prime the lubricating oil pump if necessary when starting up. The pipe and valve at the top, connecting the two tanks, is for the purpose of levelling up if desired when filling up, and wishing to pump into only one tank at the bottom connection, in order to avoid stirring up the sediment.

Test cocks should be provided at all levels at which oil is to be drained off. Special care should be taken to see that the tanks are easy of access for cleaning purposes. Heating coils should be provided if practicable.

Double bottom spaces are not at all suitable for the purpose of drain tanks for the lubrication system; firstly, on account of the difficulty of cleaning out the sediment; secondly, because of the danger of leakage and contamination from the contents of an adjoining double bottom tank; and, thirdly, on account of the chance of losing the lubricating oil charge in the event of grounding. There is also the additional disadvantage already mentioned of having to carry in circulation more oil than would otherwise be necessary.

Centrifugal Separators

There are various types of centrifugal separators on the market, each specially suited for special duties; but for marine work a centrifuge should comply with the following conditions.

The machine should be as simple as possible, with few working parts, and these of such a nature that they can be overhauled and adjusted by a man of ordinary training, without requiring the services of an expert. The operation of cleaning the bowl should occupy the minimum of time. The oil flow should be in one direction from the time it enters the machine until it leaves, and the amount of oil passing through should be capable of regulation; that is, the machine should work efficiently at various outputs corresponding to oils of varying degrees of impurity. An oil having large quantities of suspended matter should be passed through more slowly than comparatively clean oil.

The bowl should be capable of picking up its true center of gyration, as distinct from its geometrical center, in order to avoid vibration should solids deposit more on one side of the bowl than on the other, as sometimes occurs in practice. The stepping up of the revolutions from the motor to the bowl spindle should be as simple and direct as possible and under observation. The application of heat assists greatly in both gravity and centrifugal separation, but is very seldom practicable on a motor ship where steam is not employed.

In the past, the two stroke engine was perhaps a little more difficult to lubricate than the four stroke, at least in the single acting types. In a four stroke engine there is a reversal of stress in the connecting rod due to inertia of the moving parts on the exhaust and inlet strokes. This allows the bearing surfaces to part slightly, and so allows the oil to find its way in. In the case of the single acting two stroke, the connection rod is continuously in compression. But with the greatly increased knowledge of lubrication now available, there is no reason why this should present any real difficulty. Cylindrical surfaces are the easiest to lubricate, provided the rotation is in one direction. Flat surfaces, such as thrust collars, are more difficult.

The old fashioned thrust block was quite satisfactory for the reciprocating steam engine, but something better had to be provided when the geared turbine

came into use, owing to the steady torque of this prime mover.

The case in which the pressure between the surfaces is constant in direction, and the direction of motion of the rubbing surfaces is being constantly reversed, is perhaps the most difficult of all to deal with. Guide shoes and crosshead brasses of single acting two stroke engines come under this heading, as well as to a certain extent piston rings.

The wear of piston rings and liners is not, however, a simple matter of lubrication, as there are various other factors to be taken into consideration. Briefly, the rings should be as narrow as consistent with strength. They should be provided with circumferential oil grooves, and there should be no square corners presented to the oil film on the cylinder wall. That is to say, the rings should have a pronounced bevel at the corners. The formation of emulsion is more likely to be met in a two stroke engine because of the greater difficulty of keeping water from the piston cooling system and carbon from the cylinder walls entirely out of the system. However, the two stroke engine has such decided points of superiority over the four stroke as to totally outweigh any little difficulties, which can, without doubt, be overcome by careful design and management.

In conclusion, an operating engineer in any difficulty can always depend upon unfailing cooperation and courtesy from the officials of the various companies supplying lubricating oils, and he will be doing a service to all his fellow engineers if he takes these officials into consultation, and through their cooperation gains a satisfactory solution of the problems of diesel lubrication.

AORANGI MAKES GOOD

THE Aorangi of the Union Steamship Company is the largest and fastest motorship in service today. Her performance is therefore of great interest to marine engineers, and it is gratifying to learn that she is running with great regularity and usually clips a day off her schedule in the round trip. Since going into commission January 2, 1925, and up to September 17 she has completed a total mileage of 70,670. The log showed a total fuel consumption of 7973 tons for the main engines, and 1679 tons for auxiliary engines and boilers. The vessel has now completed four round trips to Australia and started her fifth trip to Sydney, September 2. Above total mileage figures include trip from Southampton to Vancouver.

The mileage and summary of one trip taken from the engineer's log are as follows:

Sydney to Auckland.....	1282 miles
Auckland to Suva.....	1147 "
Suva to Honolulu.....	2779 "
Honolulu to Victoria.....	2345 "
Victoria to Vancouver.....	85 "

Total mileage per trip.....	7638
Propeller mileage.....	8272
Slip average.....	7.6%
Mean speed.....	16.68 knots
Maximum mean speed, per day.....	18.4 "
Main engines, hours running.....	457.52
Mean draft	22'-11"
Fuel consumption, main engines.....	832 tons
Fuel consumption, aux. engines and boilers	178 tons
Total fuel consumption per trip.....	1010 tons

The Aorangi is propelled by four screws, driven by four Fairfield-Sulzer 2-cycle, 6-cylinder, fully reversible diesel engines of 3000 brake horsepower each.

WORLD'S MARINE ENGINE CONSTRUCTION

FIGURES given by Lloyd's showing the power of marine engines now building, or being installed throughout the world, reflect a slight dropping off in the construction of motor vessels. While the indicated horsepower of internal combustion engines at the end of the June quarter was 808,264, for the quarter ended September 30, it was 726,845, of which 131,770 was in Germany, and 216,510 in Great Britain and Ireland.

The indicated horsepower of steam reciprocating engines for all countries together, shrunk from 559,970 at June 30, to 478,515 at September 30, of which latter figure the share of Great Britain and Ireland was 282,361.

The shaft horse power of steam turbines in hand fell from 353,144 in the June quarter to 318,045 in the September quarter; 143,395 horsepower was the proportion of Great Britain and Ireland in the September total.

It is pointed out that of the total power represented by internal combustion engines, Great Britain and Ireland's proportion of that now under way is only 29 per cent, as compared with their 45 per cent of the total of steam turbine power, and 59 per cent of the steam reciprocating engines.

ELECTRIC PROPULSION IN NAVY

ELECTRICAL propulsion machinery is steadily gaining in popularity with United States naval officers. Not only is comfort aboard ship enhanced by this most up-to-date drive, but apparently its installation results in greater efficiency in every department if we may judge from the following records.

Battleship Efficiency Pennant: 1917-1920, none awarded on account of war; 1920-1921, New Mexico; 1921-1922, California; 1922-1923, Pennsylvania; 1923-1924, Tennessee; 1924-1925, West Virginia. You will observe that the battleship Pennsylvania is the only nonelectric ship in these years.

Gunnery Trophy: 1920-1921, New Mexico; 1921-1922, New York; 1922-1923, Wyoming; 1923-1924, Tennessee; 1924-1925 West Virginia. Of the above, the New York and Wyoming are nonelectric.

Engineering Trophy: 1919-1920, New Mexico; 1920-1921, New Mexico; 1921-1922, California; 1922-1923, Pennsylvania; 1923-1924, Maryland; 1924-1925, Oklahoma. Of the above, the Oklahoma and Pennsylvania are nonelectric.

ERRATA

In the April issue of Pacific Marine Review, we referred to the double-acting 6-cylinder diesel engine for the motorship Gripsholm as the largest diesel engine yet built. Since that date our attention has been directed to a 6-cylinder engine double-acting 2-cycle built by the M.A.N. Company in 1917 and delivered to the German Admiralty; also to the fact that a similar engine of 15,000 horsepower is now in process of construction at Bolhm and Boss Works, Hamburg.

World's Largest Diesel-Electric Dredge

Port of Portland Dredge Clackamas gives Great Satisfaction in Service on Willamette River

THE new diesel-electric dredge, Clackamas, designed and built by the Port of Portland, has now been in operation for a period of nearly two months, and is giving great satisfaction to her designers and builders because she is more than measuring up to the mechanical and commercial advantages which her designer sought to achieve. Great credit is due for this triumph in dredge building to James H. Polhemus, general manager and chief engineer of the Port of Portland, who conceived the idea of this great dredge and carried to a successful consummation its design and construction.

The dredge is the largest and most powerful of her type afloat today. She was designed and built after the successful experience of the Port of Portland and of James H. Polhemus, its general manager, in the building of the first diesel-electric dredge in the world. This latter dredger, the Texas, was used successfully by the Port for a time and then was sold to the Long-Bell Lumber Company, who have her at the present time busily engaged on their project at Longview.

In designing the Clackamas, the starting point was a 30-inch dis-



The goose-neck and flexible connection for the 30-inch discharge pipe of the diesel-electric dredge Clackamas.

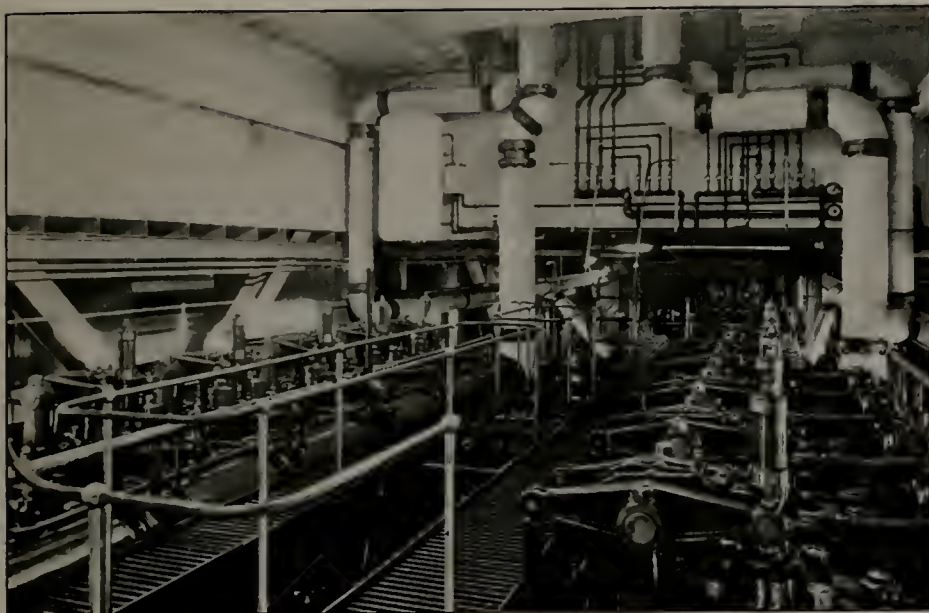
charge line, all of the present dredging equipment of the Port of Portland being for that size pipe, so that floating and shore lines are interchangeable for any of the four dredges. This is a matter of great

importance in the working out of the huge dredging project on which the Port is engaged in the Willamette River, as with this standardization any of the four dredges can be worked on any pipe line, and the stock of pipe fittings and pipe is standard.

It has been found in the steam dredges, of which there are two with direct connected reciprocating engines of 1500 horsepower each, and one with turbine engine geared drive of 2000 horsepower, that in order to meet some of the conditions of dredging and lengths and lifts in discharge lines, it was necessary to install electric boosters, which added considerably to the expense of operation. The Clackamas, therefore, was designed with a more powerful pump, which made necessary the installation of a direct-connected, direct-current pump motor of 2700 horsepower. This is said to be the largest electric motor unit afloat and was especially designed and constructed for this job by the Westinghouse Electric & Manufacturing Co. Figuring this 2700 horsepower motor as the maximum load for the generating units, it was found that 3400 brake horsepower of diesel engines would be necessary. This was supplied in four



A broadside view of the diesel-electric dredge Clackamas on the job.



View in the engine room of the Clackamas, showing upper platform and cylinder heads of McIntosh and Seymour diesel engines.

units, all of McIntosh & Seymour manufacture, two of 800 brake horsepower and two of 900 brake horsepower.

Although the new dredge has been working on a discharge pipeline 7590 feet long, moving sand, clay, gravel, and sticks to a terminal lift of 29.3 feet, she has not up to date had to apply her maximum power, and much of the time only three generating sets have been cut in and these have not been speeded nearly to their limit.

To quote a report of James H. Polhemus, the new dredge gives "fuel economy with abundant power, ability to utilize part or all of the units of the main plant, as dredging needs demand an independent control of each auxiliary aboard the dredge." Fuel economy, per se, so far as actual cost of fuel used is concerned, is not the main object at Portland. Again quoting the above mentioned report, "In the steam equipment, hog fuel, the waste from saw mills on the Columbia and Willamette Rivers, is burned." This fuel is very cheap, so far as cost is concerned, but "its use necessitates fuel barges being maintained and adds heavy cost for towing, which is occasionally for very considerable distances. Fuel barges are continuously alongside dredges, so that fuel may be fed direct to furnaces. Sometimes the barge restricts the swinging room of the dredge. Fuel supply is sometimes limited through shut down of plants. Interference with navigation sometimes prevents barges being towed

from distant mills. All these contingencies prove to be operating obstacles, and are sometimes very costly."

With the Clackamas, on the other hand, tankage aboard provides for 3948 barrels of fuel oil, sufficient under normal conditions for two months' operation. The fresh water supply is sufficient for three weeks, and lubricating oil is in excess of requirements for seven months; so that along with fuel economy, there is provided the additional and possibly greater economy of continuous operation and great mobility.

The following, taken from the

report of Mr. Polhemus, are the principal characteristics of the Clackamas, and a list of her machinery, together with an outline of the work that is being done in dredging at the Port of Portland:

The length of the hull is 236 feet; breadth, molded, 50 feet; the depth, molded, 12 feet 9 inches. Her draft is 7 feet 8 inches, and displacement, loaded, 2478 tons. The hull was constructed at Portland by the Wallace Equipment Company of Seattle.

In the electric main drive the generators are of the Westinghouse Electric & Manufacturing Company's design, and include two 610 kilowatt, 150 r. p. m., 500 volt, direct current generators and two 540 kilowatt, 200 r. p. m., 500 volt direct current generators as the main generators, and one 50 kilowatt, 325 r. p. m., 125/250 volt, direct current auxiliary generator. There is one five unit 1200 r. p. m. motor generator balancer set consisting of two 200 kilowatt, 250 volt, direct current units for 500-250 volt 3-wire system and to drive the set, one 200 kilowatt, 250 volt direct current generator for cutter drive by variable voltage system; one 60 kilowatt, 250 volt generator for forward swing hoist drive, variable voltage system; and one 60 kilowatt 125/250 volt, direct current generator for lighting and auxiliary power.

The main pump motor is of 2700 horsepower 250 to 360 r. p. m., 600 volt, direct current, adjustable speed motor with flexible coupling.



Looking down the pipe line at dredge Clackamas showing arrangements for handling spuds.

The cutter motor is a 250 horsepower, 600 r. p. m., 250 volt, direct current, shunt wound motor for operation from special variable voltage generator and to include flexible coupling. The forward swing hoist motor is of 75 horsepower, 600 r. p. m., 230 volt shunt wound motor for operation from special variable voltage generator. The forward ladder hoist motor and the stern hoist motor are of 45 horsepower, 515 r. p. m., 230 volt, direct current, series wound motor with magnet brake.

For fire and service there are two 50 horsepower, 230 volt, 1200 to 1700 r. p. m. adjustable speed direct current motors, and the two engine circulating pump motors are of 15 horsepower, 230 volts, 1150 to 1700 r. p. m., adjustable speed direct current motors. There are five fresh water, bilge, and oil heating pump motors of five horsepower, 230 volts, 1150 to 1700 r. p. m., adjustable speed, direct current, as well as three oil transfer pump motors of 10 horsepower, 230 volts, 850 to 1200 r. p. m., adjustable speed direct current.

A two-ton refrigerating machine, a complete machine shop with power tools, traveling cranes, and such equipment are located on the main deck.

The Clackamas has a crew of fifty, and special attention was accorded all matters respecting the comfort of the workers in laying out the dredge. In the galley are found electric range, electric bake oven, and the most modern sanitation features. Dining rooms are spacious, well lighted and ventilated, as are recreation rooms, while sleeping quarters are fitted with standard furnishings. Baths and washroom facilities throughout were planned with the same care and concern for the users.

At present the Port of Portland Commission centers its dredging operations principally in the Portland harbor area, but maintains the channel as well in the deep water area of the Willamette River, which covers a distance of 14 miles, extending from the upper harbor limits of Portland to the juncture of the stream with the Columbia River. A major dredging task is under way at present, in what is known as the west channel at Swan Island. That channel has been used by river craft for a long period, while the east channel, a winding route of limited width, is the path of deep watermen. The Port Commission is

turning the shallow west waterway into a deep channel of 35 feet with an ultimate width of 2000 feet. Material removed is being used as a fill on the west bank, known as the Guild's Lake district, where several hundred acres of low land are being reclaimed for industrial purposes. On the east side, in the Mock's Bottom section, almost as large an area will be brought from a low, swampy area into a high level fill that will be available for commercial purposes. The improvement of the two sections will not only afford additional sites for manufacturing enterprises, but will expand the shipping zone with most desirable locations for terminal and dock improvements. Both localities are served by trans-continental railroads, and, with abundant depth in front, they will afford berthing space for the larg-

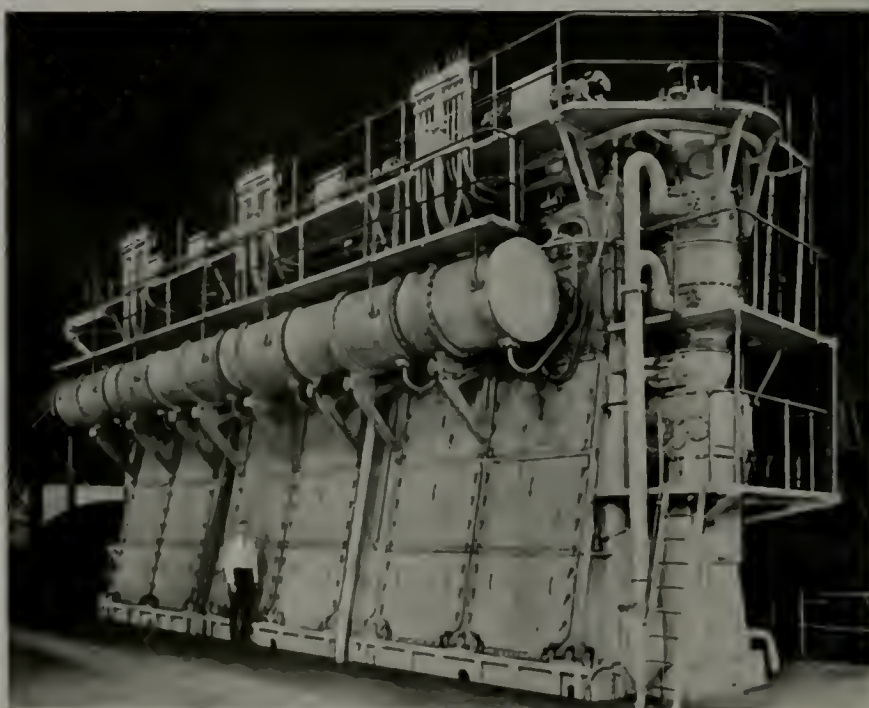
est vessels in the trade of the Willamette and Columbia Rivers. Then, too, there will be improved under the same operations the water-frontage of Swan Island, the plan calling for a wide, deep, through channel on the west side, and a mole on the east side, the island and east shore being connected by a causeway.

Through the establishment of assessment districts the low lands are filled at minimum cost to the property owners, since the port commission shoulders a share of the outlay as a charge against channel betterments. As a project, it represents one of the largest dredging undertakings under way in the country today, and from a local standpoint it is viewed as the most important step planned for the permanent development of the harbor.

Motorships Doing Well

THE remarkable performance of the motorships City of Panama and City of San Francisco, operated by the Panama Mail Steamship Company in the California-Central American trade, is exciting much favorable comment on the Pacific Coast, and it is hinted that the owners intend, at some future date, to build other vessels of this type for the Central American route. The two vessels have now been operating upward of a year, and their repair bills have been almost wholly negligible

In eight months the City of Panama has required only a small welding job, costing less than five dollars, and the upkeep record of the City of San Francisco is little, if any, less impressive. They are both powered with twin 6-cylinder, 4-cycle, single-acting, directly-reversible, cross-head type Burmeister & Wain diesels, each developing 1,400 horsepower, and making 130 revolutions per minute at full speed. The vessels were built at the Gotaverken Yard in Sweden.



The Bethlehem 3000 brake horsepower 2-cycle Diesel Engine

Fair Winds and Foul, By Frederick Perry. 204 pages, illustrated with 8 halftone engravings and two full page drawings; published by Charles E. Lauriat Company, Boston.

This is a narrative from personal experience of the writer, setting forth the "daily life aboard an American clipper ship." Mr. Perry was appointed one of the "Ruius Hatch Cadets" in the Pacific Mail service in 1873. At the end of a three year course, including "naval architecture, international and commercial law, steam engineering, navigation, and practical seamanship," he entered the service of the "California Clipper Ships." He shipped as third mate on the *Continental*, Captain Clark. Later under the author's command the *Continental* was for a short time one of the so-called "Hell Ships," and First Mate Perry was convicted in the courts of San Francisco for cruelty on the high seas.

The book is a frank story of hard life at sea in the late seventies and early eighties, and is well worth reading. The author's reckless courage is well attested by his dedication "To the most tyrannical but just and lovable little captain that ever trod the quarter deck of the good ship *Matrimony*, my wife."

Port Development, by Roy S. MacElwee. 465 pages, numerous illustrations, tables, and diagrams; published by McGraw-Hill Book Company, New York. Price \$5.

This new book, by the author of *Ports and Terminal Facilities*, is supplemental to that work, and covers much entirely new matter in fields not touched upon by the earlier volume. It is divided into four parts. First of these deals with the general reasons for port development, the value of such development to the port city, and to the state and nation. Second part compares the general features of the world's great ports. Part three discusses traffic advantage of the port. The fourth part discusses the subject of free ports.

The volume is well arranged, fully indexed, contains valuable statistical tables of reference, and reviews thoroughly the many factors affecting port development and port planning.

A prominent Pacific Coast port engineer says of this book:

"To 'Port Development' recognition may go for valuable information, comparative statistics, analytical data, and suggestive methods for salesmanship in connection with port business. The port official might profitably adopt the volume for reference if his port be already prosperous, or for encouragement or assistance if his port be small or struggling, for it stresses the importance of putting personality into the business of selling a port, a rather new feature of development."

Twelfth National Foreign Trade Convention. 515 pages, bound in green buckram with gold stampings; issued by the Secretary, National Foreign Trade Council India House, Hanover Square, New York.

This is a verbatim report of the proceedings, discussions, speeches, and addresses at the great convention in Seattle, June 24 to 26, 1925. It forms a great record on American foreign trade practice, progress, and experience, and is becoming almost a neces-

sary text book in commercial courses and for individual students in foreign trade subjects.

The group sessions at Seattle covered a wide variety of subjects and countries, and were attended by some of the world's greatest experts. There were sessions for each of the following geographical and political divisions—Japan, the Philippines, Mexico, Netherlands, East Indies, Malaysia, Canada, China, India. Special group sessions discussed such subjects as Foreign Representation for Export; Foreign Trade Credits; Export Problems of Pacific Northwest; Imports. These subjects, as presented by experts and as discussed by practical operators, are all set forth in the proceedings, and the text, therefore, forms an authoritative body of thoughtful comment, analysis, and conclusion which cannot fail to be helpful to those who are interested in foreign trade and who will take the time to study these "Proceedings."

A Graphic Table Combining Logarithms and Antilogarithms, by Adrien Lacroix and Charles L. Ragot. A neat cloth-bound volume of 60 pages; published by the MacMillan Company, New York.

This book gives in graphic form two continuous scales which may be read directly "without interpolation the logarithms to five places of all five place numbers, and the numbers to five places corresponding to all five place logarithms." This table is constructed with a numerical scale and a logarithmic scale, each having a common line as a base, and presents in a different form the same idea as was embodied in the old spiral slide rules. By a very simple and ingenious typographical device, it is made possible to place this graphic table in compact economical form. An extra line is used to indicate the addition of a unit wherever the zero divisions of the scale occur at points other than the margin. Thus the scale is made continuous, easily readable, and conveniently compact.

We predict a large usefulness for this new form of logarithmic table.

Prosperity Through Power Development. 60 pages, bound in green buckram with gold stampings. Published by National Electric Light Association.

This little volume is a very valuable compilation from papers presented by the American delegation before the First World Power Conference, held at London, July, 1924. The book is in six chapters, entitled, Power Essential to Progress; Super-power, the Next Step; Super-Power, a Reality; Private or Public Ownership—the Crucial Question; Government Regulation with Private Ownership; Conclusions.

The Export Executive. By B. Olney Hough. 503 pages, bound in back imitation leather with gold stampings. Published by the International Textbook Company, Scranton, Pennsylvania.

The book is divided into four parts, the first covering export trading, the second devoted to the science of getting export business, the third dealing with the practice of handling export business, and the fourth explaining export financing. This book should be on the desk of every man interested in foreign trade. Mr. Hough is an attorney and an export counselor. He is the author of a number of books covering various phases of the export business.

The Sandvick Steel Belt

MANY marine terminals are exceedingly interested in economical machinery for handling materials. Belt conveyors of many types have been developed for the handling of general cargo, also for the handling of special materials. In recent years a new development along this line has been brought into the United States in the shape of a steel belt formed of an endless band of steel. This development was very well described by James S. Pasman of Sandvick Steel, Inc., New York, in a paper read at the Tenth Exposition of Chemical Industries, Grand Central Palace, New York, on October 2, 1925, as follows:

The steel belt is not a new development, although it has only been marketed in the United States for the past three years. In Europe, however, there are hundreds of installations of steel belt conveyors handling a wide range of materials.

When a steel belt is mentioned, a person may not at first picture a belt resembling, and operating in the same manner as fabric belts in common use, but often conceives a belt composed of steel sections or slats linked together to obtain flexibility.

The Sandvik steel belt is, however, a high-grade Swedish charcoal steel band or strip, cold rolled, hardened and tempered, and of a high carbon content. The ores from which it is derived are exceptionally pure, low in sulphur and phosphorus, and as charcoal is used as a fuel in refining, the purity is retained in the steel.

The belt is available for conveyor purposes in commercial widths of 10 to 24 inches, ranging in thickness from .031 inch. to .039 inch., and in one piece lengths of about 300 feet.

It is a spring steel, and a belt actually constitutes a spring of unusual proportions. Consequently, in conveyor work, providing proper diameter terminal pulleys are employed, the molecular structure of the steel is not affected by the constant bendings to which the belt is subjected, and fatigue or crystallizing of the metal, resulting in cracking, does not occur.

The hard, smooth, and dense surface of the steel belt makes it particularly well suited for the handling of wet, hot, and sticky materials, as well as materials which are very abrasive.

The special methods of heat treatment, hardening, and tempering are found to give the Sandvick belt better rust-resisting qualities than common cold rolled steel of similar composition.

The ordinary method of splicing the steel belt, and one which has been found to be most satisfactory, is by means of an overlap riveted joint, with holes countersunk and

heads of rivets ground off. This joint is very simply made in the field, is exceptionally smooth, and has proved to be very durable.

It is apparent that installation of a steel belt in a good many cases is more simple than the already simple belt conveyor; that the use of a large number of working parts such as are required with apron conveyors, flight conveyors, etc., is avoided, and that the steel belt has widened the application of belt conveyors to include the conveying of materials which heretofore could not be economically handled on belts in common use.

Steel Switchboard Proves Commercial Value

A NEW type of switchboard, constructed of stretcher level sheet steel, has been designed by the Westinghouse Electric and Manufacturing Company, that may be used advantageously in power, railway, industrial, and marine installations. This new type of switchboard is light, substantial, sturdy, and easily erected.

The influx of steel switchboards has been a gradual one since 1915 when it was found that the ordinary slate and marble boards would not stand up under severe operating conditions. They were brittle and easily broken, and were subject to stain by oil which marred the appearance of the board. In addition, they were heavy and cumbersome.

For some time stretcher level steel switchboards have been used on small installations in a more or less experimental way and have proved successful, so that they are now being installed on larger projects. The outstanding features of

this new type are lightness, substantial nature, appearance, and inexpensiveness. The erection and maintenance costs are lower than those of the slate and marble boards. The erection, in addition to being cheaper, is more simple since the framework is an integral part of the panels.

The steel panels are given a baked enamel finish similar to that used in the auto industry. They thus present a most pleasing appearance, and in addition are impervious to moisture and easily resist the corroding action of salt sea air.

The most important installations from the power and railway standpoint are those of the Staten Island project which is part of the complete electrification of the Baltimore and Ohio system from Baltimore to New York, and the installation in the automatic sub-stations of Steubenville, East Liverpool, and Beaver Valley Traction Company.

Marine Show Forecasts

The American Marine Exposition for 1925 will be held in New York throughout the week of November 9. Our December issue will feature many of the exhibits. The following releases outlining plans for participation in the exposition reached us in time to be included here.

At the Marine Exposition Worth-

ington Pump & Machinery Company intends to feature the cylinder, piston and piston rod, and spray valve of their new double-acting two-cycle diesel oil engine. This engine, built for the Shipping Board, has been in operation on a thirty-day non-stop run. It has also had a number of ten-day and longer period runs. So far, the engine has

admirably withstood several million revolutions under full load without distress or damage. The cylinder, piston, and piston rod show practically no wear, as a result of the splendid design and construction of this engine.

Booth No. 81 will be occupied by the General Electric Company at the American Marine Exposition in New York, November 9 to 14. The exhibit will include a steam engine driven generating set with its switchboard, a turbine suitable for driving either a generator or a pump, a "below decks" motor of the new CD line, a searchlight, and an air mail beacon. C. T. McLoughlin will be in charge of the exhibit for the General Electric Company.

The C. H. Wheeler Manufacturing Company will exhibit a two stage Radojet, a two stage Radojet with combined inter and after condenser for closed feed water systems, a turbine driven condensate

removal pump, and a low pressure Radojet augments. In addition to these there will be shown an absorption dynamometer of the Froude type for which this company holds an exclusive license in the United States.

The Winton Engine Company will display one of their Model 116, six-cylinder, full diesel type marine engines, and a single-cylinder Model 118 Winton air compressor set. These are two of the latest Winton designs and are particularly noteworthy because of their clean-cut, symmetrical appearance, and marked improvements in design and construction. Due to the maker's reputation as one of the world's leading and most progressive builders of diesel marine engines, visitors at the exposition will undoubtedly give special attention to this display. A. G. Griesse, 331 Madison Avenue, New York, will be in charge of the exhibit.

World's Largest Coal Dumper

A MOST important addition to the extensive facilities of the Reading Company's 3800 mile railway system at Port Richmond, its Philadelphia Harbor terminal, has been made during the past year with the installation of the world's largest coal car dumper. This piece of machinery, capable of handling 40 100-ton coal cars each hour, is located on pier 18, Philadelphia Harbor, and to a great extent is electrically operated, while all control apparatus is electrically actuated.

The Reading System serves all principal cities in Eastern Pennsylvania and connects with many trunk lines traversing the state. The huge new dumper operates to serve freighters with export coal, barges for coastwise trade, the smaller craft for direct delivery to the industries of the Port of Philadelphia.

Cars to be dumped are pulled up a 12 per cent grade on to the dumper cradle and are hoisted vertically to the hopper. A main operator stationed in a cab near the top of the machine has a clear view of the car as well as the ship into which it is to be emptied. From here the raising of the car is controlled, as well as the height of the pan into which the coal is to be dumped. Hoisting machinery is operated by steam, while the pan

is governed by a 150 horsepower Westinghouse electric motor.

At the end of the pan into which the coal is dumped there is a telescopic chute, with an operator to control its movement stationed in a cab directly over the ship's hatch, so that proper direction of the flow of coal can be obtained. The entire operation is controlled electrically and with surprising flexibility, which assures proper draft of the ship fore and aft. The pan and telescope mechanism are hoisted clear of receiving ships before and after docking by a 275 horsepower motor, protected with limit relays and full magnetic dynamic breaking controller.

In connection with the car hoist, a large thawing house is maintained on the dock for winter weather. Four tracks pass through the building, having a total capacity of 48 cars. A temperature of 200°F. is maintained in extreme weather, which quickly thaws the coal for dumping into waiting barges or ships.

Steam equipment for the car hoist and thawing house was supplied by the McMyler Interstate Company, while electric motors and controlling equipment were manufactured by the Westinghouse Electric & Manufacturing Company.

Scoggins Shear

J. C. SCOGGINS, of Los Angeles, has designed and patented a new shear in which the body is a steel casting with a bottom lug adaptable for gripping in a shop vise or bolting to a bench or board, its action being controlled by a single lever. The cutting blades are easily replaceable, and are held in place by two bolts each, the jaws being so designed that no strain caused in operation is taken up by the bolts. One of the patented features of the shear is the method of hinging the jaws, so that there is no possibility of misalignment regardless of the material sheared from the thinnest tissue paper to the ultimate capacity in steel. This same arrangement in construction permits of slitting as well as cutting off, and assures a smooth cut.

The most interesting feature of this new tool is the system of leverage, which is so well compounded that a slight pull on a 3-foot lever easily cuts up to 1/4-inch flat steel stock.

For the manufacturing of the new shear and other shop tools which Mr. Scoggins either has patented or is developing, the Industrial Sales Company has been organized, and production on the new tools is well under way at their plant at 443 South San Pedro street, Los Angeles.

New Marine Boiler

The Foster Marine Boiler Corporation, represented by Berry Dunn at 238 Sacramento Street, San Francisco, has lately put on the market for marine use a new type of steam generator which claims decided advantages over all previous kinds.

The stack temperatures are very low.

The weights are kept down to a minimum.

The ratio of efficiency is from 85 to 90 per cent, while the older sort of boilers were considered fine when they gave from 65 to 70 per cent, which seems to show that the new unit will enter the field as a close competitor to the diesel.

Later Pacific Marine Review will give a more detailed explanation of this new development.

Technical Literature

A test which could be applied to steel hoisting rope to show whether it is in safe condition or not, and which would not require the cutting of a sample from the rope, would be of great value. Every industry and operation which depends on wire rope for hoisting and hauling purposes is anxious to learn of some method by which the condition of ropes can be determined in service.

For some time the Bureau of Standards, Department of Commerce, has been investigating the possibility of applying some form of magnetic test to wire rope to determine its condition, as it is known that breaks in the individual wires, worn places, etc., as well as the stress on the rope, affect its magnetic permeability.

In order to design intelligently apparatus for the nondestructive testing of wire rope, it is necessary to know the nature and magnitude of the effects involved. One of the causes of deterioration of rope is wear, and the Bureau has recently completed an investigation of the effect of wear on the magnetic properties and tensile strength of steel wire such as is used in the manufacture of wire rope.

The bureau found that wear increases the magnetic permeability for low magnetizing force, and decreases it for higher values. In other words, opposite readings are secured, depending on the magnetizing force employed. A load on the wire produces a similar effect, though it is much less in magnitude and is probably caused by a redistribution of the internal stress in the wire. This change in magnetic properties is accompanied by an increase in the tensile strength.

The complete results of this investigation are given in Scientific Paper No. 510 of the Bureau of Standards, which can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for five cents.

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., is distributing its new 1925-27 Catalogue of Electrical Supplies. The catalogue presents a complete representation of the apparatus manufactured by the Westinghouse Company or obtainable through its district offices or agent jobbers, and gives detailed information on electrical supplies.

The publication, which contains 1200 pages, and is profusely illustrated with 4500 engravings, lists all new apparatus designed and manufactured in the past two years, as well as all the previously established types. A brief description of the company's industrial motors and controllers, power and marine equipment, large switchboards and oil circuit breakers, and railway supplies is also included. Four indexes for the convenience of the user have been included in the catalogue.

Detroit Underfeed Stokers of the single retort type are described in a new and very attractive 32-page bulletin just off the press. Among other items of outstanding interest to combustion engineers, the bulletin contains a number of fuel bed cross sections showing conditions of the fire with respect to air distribution and movement toward the dumps. One section of the book is devoted to the application of the stoker to both low and high set boilers. Another section shows how twin settings serve very large boilers.

Copies of this bulletin, which is No. 1018, are available upon application to the Detroit Stoker Company, General Motors Building, Detroit, Michigan.

The Diamond Power Specialty Corporation has reprinted a very striking bulletin entitled "The Best Paying Investment in the Power Plant." This bulletin features Diamond Valve-in-Head Blowers, and contains information and data which should be of interest and value to the power operator. Copy may be obtained by addressing the Diamond Power Specialty Corporation, Detroit, Michigan.

Centrifugal Pumps Catalog. An up-to-date discussion of the design and applications of centrifugal pumps is presented in a copiously illustrated, 72-page book issued by the De Laval Steam Turbine Company, of Trenton, N.J.

This company manufactures centrifugal pumps of the single stage and multistage types for power plant, water works, drainage, hydraulic pressure, and other services and first introduced, in 1901, the high efficiency, high head, high speed centrifugal pump is practically the present form as adopted by most builders of centrifugal

pumps, with two part casing split in the plane of the shaft axis.

At the same time the practice of manufacturing centrifugal pumps to limit gages on an interchangeable basis throughout was instituted, so that renewal parts supplied by the factory could be inserted by the customer without having to be fitted. Centrifugal pumps are now built to have efficiencies exceeding 87 per cent, and with characteristics such that the load on the driving motor decreases rather than increases when a given discharge is exceeded, thus protecting the motor against overload. Combined with geared steam turbines, centrifugal pumps for water works service compete in duty with the most highly developed triple expansion reciprocating pumping engines. Engineers who have to do with the pumping of water, whether against low or high heads or in small or large quantities should find much of interest in this publication.

High Temperature Insulation is the title of Bulletin No. 131 compiled by the Celite Products Company. This is a lecture to be delivered during 1925-1926 by the engineering departments of leading universities throughout the country.

This lecture contains data on the methods of heat transmission through heated walls with formulae for determining heat losses through walls composed of materials of varying conductivities. Temperature gradients through typical walls are shown as well as information on the application of insulation to typical high temperature equipment, such as boilers, furnaces, kilns and equipment used in the refining of petroleum and in the making of glass, steel, gas, etc.

These copies of the bulletin may be obtained from the company at their Los Angeles, San Francisco, New York, or Chicago offices.

Capacitors is the title of a 24-page bulletin (GEA-77) just issued by the General Electric Company, describing the value of this device in power factor correction on electric generating and distribution systems and for direct installation at motor terminals on low voltage circuits. Details are given as to operation, location, etc. Illustrations in the form of charts, diagrams, tables, and photographs are used.

Pacific Workboats and Their Power Plants

Winton Sales Set New Record

THE Winton Engine Company, reports that Winton sales for the past year have set a new high mark that has never before been approached in the history of the company.

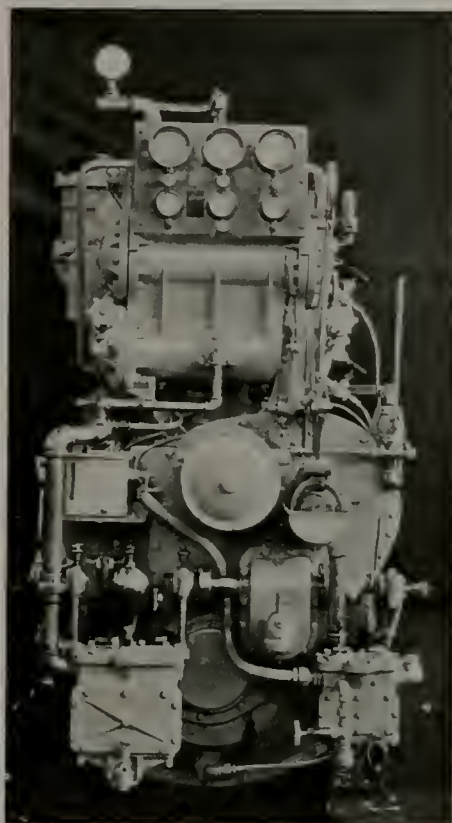
"The most satisfactory feature of this increase in business," says George W. Codrington, the company's vice-president, in a recent statement, "is the fact that our sales have mounted gradually but steadily. There have been no spasmodic jumps, with their usual consequent reactions. We attribute this healthy condition chiefly to the remarkably fine record made by Winton engines in recent years. In no other line of business that I have any acquaintance with does actual performance count for more than it does in the building and marketing of engines for marine use. For reasons that are obvious, shipbuilders and naval architects and engineers cannot afford to

many different kinds of service. As a result, most of this country's diesel towboats and commercial vessels, taking into consideration ships now in service and under construction, are powered with Winton diesel engines. This fact speaks for itself, and justifies our claim that the Winton diesel leads the world in its field."

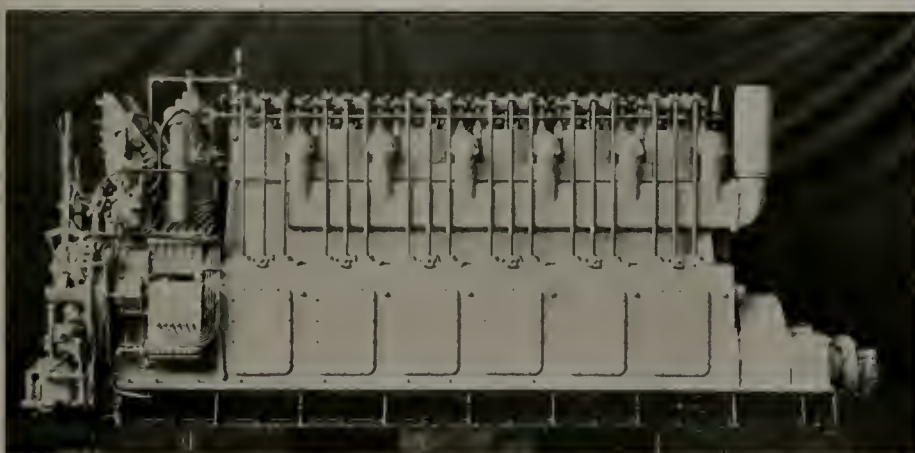
Indicating the volume of business now being done by this company is the fact that new orders recently placed call for 250 Winton engines of various sizes for well-known companies and individuals.

As will be noted from the illustrations accompanying this article, the Winton diesel is compact neat design lending itself to mass production. It is manufactured in a modern plant under a limit gauge system which insures that all like parts shall be interchangeable.

Model 116 generates 300 brake horsepower at 450 r.p.m.

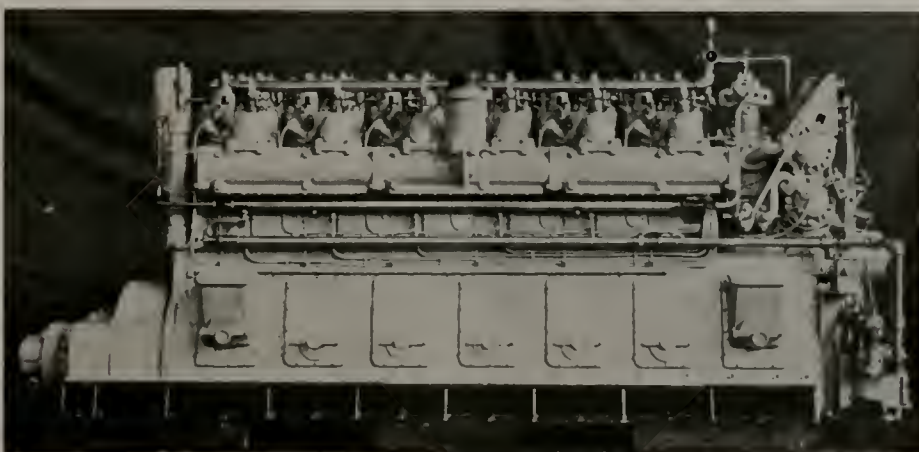


The three views on this page give a good idea of the neat appearance and compact design of the new 6-cylinder, 4-cycle Winton full diesel engine, model 116. This engine is especially designed for diesel-electric drive. A complete unit of this type will be on display in the Winton booth at the Marine Show, New York City, November 9 to 14.



guess or experiment in selecting a marine power plant. The only way in which they can justify their selection of a marine engine is by having the utmost possible assurance, in advance, as to what that engine will do when it goes to sea, beyond the reach of repair shops and factory experts. And the only safe basis for any such assurance lies in a record of actual achievement, not in promises, or hopeful, unjustified expectations.

"Men who are informed as to the trend of events in marine circles are familiar with the noteworthy record made by Winton engines in



A PASSING TYPE

Our illustration shows one of the few old type steam tugs still in service on San Francisco Bay. This boat, the Union, is used by the Union Iron Works in transporting men and materials and in towing barges between their various plants on San Francisco Bay. Note the tall stack to increase natural draft on boilers.

This type of tug is being entirely replaced by internal combustion engine driven craft, which permit of one man control and of tremendous savings in operating costs.



One Man Control

THE first application of the "one man control" workboats was made by Captain W. Coggeshall of Eureka, California. It was arranged on the gas boat Wannacomet several years ago by Captain Coggeshall and was at first strongly opposed by the other boat owners. In fact, complaints were lodged with the United States Inspectors of Hulls and Boilers to the effect that the contraption was unsafe and dangerous. After the in-

spectors had looked over the arrangement it was pronounced good, and Captain Coggeshall was highly complimented.

Since then the idea has been elaborated upon, and all Pacific Coast boats of less than 60 feet long are fitted with controls operated by one man, who attends to the handling of the boat and its power plant. The Wannacomet is powered with a Standard gas engine.

Uptown Boat Building

H. C. CARLSON, formerly of San Francisco, now located at 1103 Island avenue, Wilmington, California, is building for C. H. Hill, Jr., 3508 West Sixth street, Los Angeles, a craft with the following measurements: 39 feet 6 inches long, 10 feet beam, draws about 34 inches, single screw, sleeps seven people, capacity 260 gallons gasoline, 96 gallons fresh water.

The motor has not been selected or purchased yet, but the boat is designed for six cylinders, 100 horsepower.

The particular feature in the design of the boat is that the motor is to be placed aft beneath the cockpit, leaving the cabin quarters free for communication and freeing them from any engine odors. All controls are also aft, the wheel being placed within a three-sided glassed enclosure at the forward end of the cockpit. In the words of the builder, it is certainly a big little boat.

The boat has been built and completely fitted out in a garage located at 3580 West Sixth street, Los Angeles, with the idea of trucking

it to the water. This is the second boat built by Mr. Carlson under the same conditions, and he has been commissioned to build another.

Diesel Manoeuverability

THE absolute reliability of diesel engines was shown lately when the motorship Chile, under her own power and without aid of tugs, was taken out from Encinal Terminals, Alameda, through the Oakland estuary to sea. This was done at night time, and the Webster street drawbridge had to be negotiated. Any failure of the engines to respond would have been disastrous. However, the Burmeister and Wain diesels kept up their record, and manoeuvred more readily than triple steam. Pilot George Pavesich says they are quick on the signals, and that he had no trouble whatever in the navigation. As the Chile was drawing some 29 feet at the time, it shows that our Pacific Coast harbors are all to the good, that our pilots are able men. This is the first time so deeply laden a vessel has been taken out of the Alameda inner harbor during the night time. Twelve hours of vessel time were saved by this fine work.



A BAY TANKER

The illustration shows the Associated Oil tanker Redline on her trails on San Francisco Bay. The Redline was built by the Moore Dry Dock Company of Oakland and is engined with two Western-Enterprise full diesel engines. She is giving an excellent account of herself in regular every-day service.

Workboat Notes

The Workboat Peterson No. 7, operated on San Francisco Bay by the Harbor Tug and Barge Company, recently sunk in collision with a naval tug, has been put back to work again. She was lifted from the bottom of the bay by the Haviside Co.'s derrick barge No. 4 (described in the September issue of *Pacific Marine Review*) and was landed on the wharf. Repairs were made by the United Engineering Company, San Francisco, the engines were thoroughly overhauled by the builders, Fairbanks, Morse & Co., and Captain Mitchell of the Harbor Tug and Barge Co. reports her as good as new.

* * *

Peterson No. 2, one of the old time workboats with gas engine, has had the 110 horsepower original gas engine taken out and a new Fairbanks-Morse 150 horsepower diesel installed. The Harbor Tug and Barge Co., owners, are rapidly making these changes in their fleet, as they have learned that more and better work can be done at considerably less fuel cost with the diesel engine installations.

* * *

One of the first, as well as notable jobs performed by the new workboat Harbor was when she, alone, towed the Danish motorship Arabian from Howard Terminals, Oakland, to her dock at Islais Creek, San Francisco. This was done at two o'clock of a dark morning, the vessel drawing 26 feet at the time. In addition, the big ship was turned around and docked stern in, for more advantageous loading. Captain George Presvich,

state pilot, was in charge. The job is believed to be unique from the fact that only one tug was used. The Harbor, however, is one of the best of her type on San Francisco Bay.

* * *

FISHERMAN MAINTENANCE

Orville Davis, marine superintendent for the fishing fleet of A. Paladini, Inc., San Francisco, specialized in diesel engine construction before he came west. He served in shops on the shores of the Great Lakes and worked on the first diesel engines built in that district. For the past twelve years he has made his home in San Francisco and for three years has been caring for the mechanical business of this fishing fleet. As a proof of his care and attention to the work it is of record that there has never been a breakdown of any of the engines under his charge. Speaking of the latest Paladini seagoing boat, the Achilles, Mr. Davis says that her performance has been most satisfactory in every way; that she is economical on fuel, easy of operation and handling, and the matter of repairs is almost negligible. Mr. Davis has his headquarters at Pier 23.

* * *

MARINE SHOCK ABSORBERS

When two boats bump together it requires something resilient to absorb the shock. This was found out when the fishing boats transfer the catches outside the heads, one of the fleet gathering up the fish from the rest and taking it inside to a market. Many a solid

rail and fender piece has been splintered in the past, but the use of pneumatic truck tires has softened down the force of the crashing impacts. The old-fashioned cork fenders split and broke, but the rubber truck tires hold on and do the work well. The favorite size used is 40 by 8 inches, and the old ones of this size find a ready market among the fishing fleets.

* * *

A SPEEDY JOB

Sometimes there is a bit of fun around workboats and barges. It not all a serious and steady grind. Incidents really comical sometimes happen as witness the following.

Some time ago a barge being towed by a workboat had her port fender piece carried away. The captain of the boat towed her to a repair yard and ordered a quick job of fixing the damage. In fact, being unfamiliar with such work he insisted it be completed by the next morning. The boss of the yard, something of a humorist, knew it was impossible, but made no comment. However, after the workboat and her captain had gone, the yard man with a few men turned the barge around, with the uninjured side away from the wharf.

The next morning, bright and early, the workboat came alongside, and her captain elated at the apparent completion of the job, made fast and towed the barge away. He did not notice the mistake until he was quite a distance up the harbor. Since then it is not healthy to ask him how long it takes to fix a broken fender piece.



Part of the Oakland harbor unit of the fleet of the Harbor Tug and Barge Company as assembled ready for business at the Oakland headquarters of that firm.

The Marine Superintendent

His Problems - His Contacts - His Responsibilities

Marine Salesmanship - I

Short Talks on Methods of Getting Marine Orders

TO many of our go-getter salesmen handling large accounts in the American industrial market, the marine field is a mysterious realm, a no-man's land, a terra incognito. Many of these gentlemen frankly tell us that they would like to get into the marine market and have tried on occasion so to do, but always have met with an impassable or impossible purchasing agent who retreated behind one or two "smoke screen alibis." It was either "See the port engineer about that" or "Show me a number of successful marine installations of your apparatus, and I will think it over."

From this experience these salesmen usually report back to their principal that there is no use trying to break into the marine market on the Pacific Coast because it is "controlled by a ring who keep all the plums for themselves."

Usually when we find time to trace the modus operandi of the sales effort which brings this result, we find that the salesman has received an inside tip that some vessel on the waterfront due to sail in a few days needs some fittings or equipment which he can supply. Happy in the thought of an easy sale, he calls on the purchasing agent. That gentleman, busy with other things, and not knowing the brand, refers him to the marine superintendent. Still elated and confident, our salesman calls on the marine superintendent. Now the M. S. is usually a hard-boiled old operating engineer or more hard-boiled old skipper, and having on his mind the business of attending to the thousand and one details of getting the ship off on time, he is right now in the worst possible mental state for considering a new article. He therefore figuratively, or actually throws the salesman out of his office and is mentally "off of him for life" and says so in very vigorous Embaracadero argot.

Knowing how often such scenes occur in the busy lives of our salesmen and marine superintendents, and knowing too, a little forethought and study of the conditions on the part of the salesmen will remedy

MARINE SUPERINTENDENT

The marine superintendent or port engineer is a very important factor in the proper functioning of a steamship company. To his ability and knowledge of ships and engines is due much of the credit for satisfactory returns. The managers know this, and depend greatly on him for advice regarding matters pertaining to the physical operation of their floating property.

In San Francisco there are some of the ablest men of the profession filling the position of marine superintendent. These are men who know ships and engines through the various stages of their building and operation, and many have served as officers at sea, in the engine room or on deck. They are resourceful chaps, and can meet any emergency quickly. They must devise means to avoid heavy expense in loading and handling freight, and must manage so that repairs are effected at a proper price. They must also keep in close touch with crews, and they generally select the officers and, therefore, must be good judges of men.

In this new department of Pacific Marine Review we hope to introduce our readers to the marine superintendent and to evolve a better understanding of the problems, the contacts, and the personality of that important official. The department editor handling this section has been in close touch with marine operations for many years, and will be able to cooperate intelligently with Pacific marine superintendents to make the section of great mutual value.

this situation, Pacific Marine Review ventures to suggest a few features peculiar to the marine market which have a very obvious and necessary influence on the attitude of the marine superintendent to the sales engineer and which largely govern the methods by which the latter may successfully approach the former.

Isolation and the Time Element

One of the features peculiar to the marine plant is isolation. The vessel is separated from her home base and from the watchful eye of M. S. for periods ranging up to four months quite frequently, and in unusual cases up to a year or more. This is one of the prime causes of marine conservation. Any part of her equipment, any portion of her supplies, any fitting in her engine room, any of her numerous auxiliary machines may at any emergent moment be called upon to withstand destructive shock or strain at a time when failure may mean disaster to the vessel and to the cargo and the human life involved. It, therefore, is very necessary for each item of equipment, supplies, or fittings to have proved itself before being used, and the salesman who is trying to break in with something new is put in much the same position as the Irish boy whose mother would "niver let him go near the water till he learned how to swim."

This feature of isolation makes the time element in sales approach very important. The sales approach to be successful must be properly timed and must be often repeated. The marine superintendent must first be cultivated as a friend from whom the sales engineer can learn in a friendly way the troubles and triumphs of a man on whose brain rests the responsibility of ship schedules. This is best done, of course, in the lull after sailings, when the marine superintendent has settled back for a quiet smoke and is congratulating himself on another on-time departure. Then, if the salesman is a tactful listener, he may learn from the lips of the M. S. himself just the how and the

why of marine purchasing; and if he be wise he will soon get understanding and be able to put his own wares through the tests that are

satisfactory for marine standards of reliability in situations where expert maintenance, service, and replacement are alike impossible.

Maintenance Notes

A SHIPMASTER ON THE JOB.

A marine superintendent is often at the head of other than purely steamship operation. Such a case is that of Captain Francis E. Jordan, veteran seaman, who is superintendent of upkeep for the fleet of six large barges and three tugs of the Bay Cities Transportation Co., San Francisco. The repairs, overhauling, and general supervision mean close attention and a good knowledge of such matters to ensure profitable operation. The company handles around eighteen to twenty thousand tons of freight per month; consequently the equipment must be in good order at all times.

Captain Jordan has for several years attended to the physical needs of the floating property, looking after repairs and new building jobs. His company originated the package handling of freight on San Francisco Bay, and, having grown with it, the superintendent knows the game. Before he engaged in this business, Captain Jordan was master of many sailing and steam vessels, both on this and the eastern coast. He was also engaged in tug handling at the building of the Panama Canal. He took the German steamer Gruenwald from Panama after she had been reconditioned and named the G. W. Goethals, delivering her to the Panama Line at New York. Captain Jordan is a "Down-East Yank," and was brought up in the famous old firm of Arthur Sewall & Co., Portland, Maine. The captain can be found almost any day at Pier 5, San Francisco, and likes to speak of the old days and of tall, white-winged ships.

A SWIFT MAKE READY

An incident worthy of note, where ready service and efficiency were made possible through the marine superintendent, was in the preparation for sea of the steamer Eldorado recently. This steamer owing to the somewhat easy market, had been laid up for a little over a year in San Francisco Bay, when the owners made arrangements to charter her for coastwise

trade. Orders were given to H. F. Gelhaus, port engineer of Swayne and Hoyt, Inc., on a Saturday to put her into commission. On the following Tuesday cargo was taken aboard by the vessel's winches and she sailed within three days, everything in good order and condition. When it is considered that every day's delay means a loss of income, this promptness in preparation meant something. Mr. Gelhaus spoke quite casually of this incident, seeming to think it all in the day's work.

A TRIPLE EXPANSION DIVORCE

Sometimes marine engines, like folks, are divorced. Such happened to the power plant of the yacht America. She was built and fitted with two sets of geared, valve type triple expansion engines of 2000 horsepower each. When the yacht was dismantled, her engines were sold to Craig's Boat Yard, of Long Beach, California, and were there reconditioned and placed in two different ships. Before conditioning for the prosaic work of propelling freighters, the engines were slightly changed to permit of a lower steam pressure and slower revolutions. These changes also reduced their power to about 1000. The port engine was put

into the steamer Eldorado and the starboard engine went to the Silverado, both constructed to the order of Swayne & Hoyt, Inc. They still, like humans under divorced conditions, work directly opposite to one another; one revolves from left to right, and the other from right to left. Both, however, fulfill their duties admirably, and though separated, function finely.

ROBERT HILL OF McCORMICK

A well-known engineer of San Francisco is Robert Hill, who attends to the various matters pertaining to the physical upkeep of the McCormick Steamship Company's fleet. Mr. Hill is a native of "bonnie Scotland," and, like most of the race, is a credit to the land of his birth. Coming to San Francisco when thirteen years of age, he started to learn the trade of marine machinist at the old Jardine Iron Works. Completing his apprenticeship, he took to the sea and served under Jas. Richards, an old-timer, then chief engineer of the steamer Mineola.

Mr. Hill's progress was rapid, and he soon had the highest certificates given by the government for ability as chief engineer of ocean steamers. This position he filled in different vessels, later taking shore duties. One of these was port engineer for the Shipping Board. Previously he was with the Moore Dry Dock Company in charge of all the marine installations of the vessels built at that yard.

About three years ago Mr. Hill was appointed to the position he now holds with the McCormick Steamship Company. Under his care the record of fleet performance is of the best, and the place is not one for an idle man, as there are twelve vessels owned by the firm, together with six chartered. In addition, five of the Munson Line steamers calling here come under Mr. Hill's mechanical supervision, being handled on this coast by the McCormick organization. While obviously a busy man, Mr. Hill is never rattled or upset, and finds time to keep in touch with all the latest developments in marine engineering.



A sturdy harbor tug, whose name implies the usual condition of the marine superintendent and of all the equipment under his care.

Standing by the Standard

A Tale of Courage and Resourcefulness Illustrating How Modern Seamen are Keeping the Faith and How Owners Appreciate the Quality

SEA life has for centuries been romantic. In the olden days of sailing vessels, a peculiar charm invested the sea and its followers. Then there were pirates and privateers; ventures in practically uncharted oceans. A voyage to far shores was a thrilling event, and few passed without interesting action, made the theme of many tales.

But as the steamship began to carry the water-borne commerce of the world, romance, to a great degree, departed. Wireless and cables brushed aside the sense of isolation. Also that feeling of absolute responsibility resting on the decision of the master in all matters pertaining to the handling of the ship was lessened. But the old ocean still continues to be on unknown quantity as regards calms and hurricanes. True, the weather bureau gives close warnings of changes, but has as yet found no way to prevent them. While steamers are built to stand strenuous buffeting, at times the strain is too severe and breakdowns occur that call for ability and heroism of more than ordinary quality. Such occasions bring out the old spirit of bravery and resourcefulness, which has come down as a tradition through the centuries of seafaring life.

Many such events have happened on this Pacific Coast, but one in particular, the writer feels, calls for more than passing notice, as it shows how a determination to win through in spite of heavy odds brings about the desired result.

On September 11, 1918, the Standard Oil Company's steamer *Richmond* left the port of San Pedro fully laden with 60,000 barrels of fuel oil for the Panama Canal. She also had in tow the Company Barge No. 95, carrying 45,000 barrels of oil. The first few days of the run were uneventful. Captain Alexander Kirkwood, in command of the *Richmond*, and Captain John Ober of the barge were both pleased with the good progress made. The *Richmond's* heavy engines under the care of Chief Engineer Barney Gorman were rolling sweetly, their steady power driving the two vessels through the water at a good 10

knot gait. Routine work went on with the customary smoothness and exactness which is a feature of Standard Oil vessels. But on September 16, when off the lower entrance of the Gulf of California, a violent and almost unheralded hurricane came on. These gales are a feature of that part of the Pacific Ocean, and many a good ship has gone down by reason of them.

All precautions were made to ensure the safety of the steamer and her tow, and there was no particular anxiety as to the outcome on the part of those in charge. But the wind rapidly increased in force. The tremendous waves caused by it did not have the steady swing of a usual storm, but were thrown into jumbling and tossing masses of water, wind-torn and mad, that beat terrifically on the two deeply laden ships. And the wind, ever changing its direction, blew with increasing fury until it registered a velocity of 125 miles an hour, giving added striking power to the masses of brine now continuously hurled over the vessels, almost submerging them.

Captain Kirkwood took the bridge of his vessel that he might the better guard the conning and handling of her. Astern of her, Barge No. 95, straining at the steel cable, wallowed and rolled, nearly all the time completely under water, the seas making clean breech over her. Her upper works were soon torn through, being completely gutted, the crew lashing themselves to the few girders and parts which withstood the waters. The engines of the *Richmond* kept up their ceaseless toil, Chief Gorman stationing himself in the engine room to be handy in case of emergency. Still the storm gained in fury. Everything loose and much that was supposed to be firmly fastened was washed away. All the boats were carried away from the lashings. One of these was found months after stranded on Washington Island, many thousands of miles from where it was torn away.

The terrible turmoil of the storm-driven waters brought up from the bottom masses of sand. This became lodged in the condenser tubes, and it required skill of a

high order to keep things moving below. A stoppage of the engines at this time would mean foundering. However, by close watch and proper handling of pumps and valves, sufficient water was kept moving through the tubes to prevent a stoppage. But the awful buffeting of the storm-driven waves at last made havoc to even the staunchly built hulls. The stern post and rudder of the *Richmond* gave under the strain, and she was unmanageable. But even with this disaster, Captain Kirkwood would not give up. Neither would he let the Barge No. 95 go, but hung on. Despite the tremendous seas he, with his mates and crew, rigged a jury rudder of sorts and kept the steamer's head up to the sea.

Fortunately the gale subsided somewhat, as is usual in such sudden tornadoes, and though the sea was still tremendous, efforts were made to see just how bad the damage was. Captain Kirkwood, stripped to underwear, went overboard at the stern to find how badly the vessel was injured. The waves buffeted him about and he was cruelly cut and bruised. But he carried on and found that the ship was worth staying by. By grueling toil and ingenuity a makeshift repair was made sufficient so that by careful handling the vessel could make headway. Then the barge was hauled closer and her hurts looked to. Being lower in the water she had suffered mostly in her upper works, but she, too, had a broken rudder and fractured stern. The crew was cared for, being even in worse straits than those of the *Richmond*.

The weather rapidly calmed, the sea smoothed, and, having now a temporary rudder rigged, the two vessels were headed for Acapulco harbor, where they arrived several days later badly shattered, but afloat, and with not a man lost.

When it is remembered that while Captain Kirkwood was diving to see the damages the water around was alive with sharks, some faint idea of the danger can be visualized. That he did not cut loose from the barge was greatly to his credit, for had he done so,

(Continued on page 524)

Ports of the Pacific

Improvements - Developments - Activities

Oregon

Portland. Construction of the first unit of Portland's project for harbor improvement will commence as soon as bids can be obtained and contract awarded for the work. The first unit consists of harbor wall along the waterfront from Jefferson to Gilson streets, an intercepting sewer, and a pumping plant at Ankeny street. Bids were asked for this work by Harbor Engineer Laurgaard, which is estimated at \$2,000,000, but none were received, due to the fact that a suit for injunction has been brought into the courts by the Pioneer Realty Company against the city concerning this project.

The Northwestern Ice & Cold Storage Company is building a refrigerated warehouse at the end of the Admiral Line terminal, 84 by 200 feet, for the storage of fresh apples. Balfour, Guthrie & Company's new grain elevator will be ready for operation about November 20.

The Port of Portland has purchased 49.6 acres of land adjoining Terminal No. 4 on the north and lying in Multnomah county, which they will hold for future development.

Washington

Kelso. On August 1, the voters of the Kelso Port district, which includes also Longview, Ostrander, Castle Rock, Ryderwood, and Silver Lake, approved plans for the establishment of a port at Kelso. A 40-acre site has been obtained from the Long-Bell Lumber Company extending for 2000 feet along the Columbia River at the foot of Oregon Way next to the Long-Bell Lumber Company's mill. Plans are being prepared for the port of Kelso by Engineer N. Larry. The proposed dock will be 950 feet long, and will carry about 2000 feet of railway tracks. Two sheds will be built, one for river boats and the other for ocean vessels. Dredging will also be necessary.

In connection with the announcement of the establishment of docks at Kelso is the report of the Weyerhaeuser Timber Company of Tacoma, that they will build three mills on a 700-acre site adjoining

this property, one for fir and two for hemlock. Construction will start about December 1.

Tacoma. The General Petroleum Company has purchased a site at Tacoma for the establishment of an oil terminal.

Longview. The Standard Oil Company is building a marine distributing plant for their products at Longview on Oregon Way, with frontage on the Columbia River. The equipment will consist of a warehouse, garage, and large steel tank 117 feet in diameter and 41 feet high for fuel oil and three smaller vertical storage tanks for gasoline and distillate.

Seattle. A block of land on the Lake Union shore, with a water frontage of 1400 feet, has been leased by L. N. Rosenbaum of the United Buildings Corporation, which he intends to convert into dock and warehouse commercial use. The development of this property would include land fill, construction of bulkheads, and the sinking of piling.

Grays Harbor bar is being dredged by the Culebra to a depth of over 33 feet at low water. The bar was only 24 feet at low water when dredging operations began.

British Columbia

Vancouver Board of Harbor Commissioners have purchased the Hastings Mills site on Burrard Inlet for extensive port developments. This property is now occupied by the British Columbia Timber & Trading Co., Ltd., who will build a mill within the next three years at Moodyville. The Vancouver Harbor board plans the construction of a large pier similar to the Ballantyne pier, and later two other piers at this site, and will build at once trackage on the 400-foot easterly section.

New grain elevator will be built at New Westminster, near Vancouver. Its capacity will be 5,000,000 bushels, and will cost between \$3,000,000 and \$4,000,000. The present total elevator capacity at Vancouver is 7,000,000 bushels.

The Northwest Dredging Company has been awarded contract for blasting near the new Esquimalt graving dock for \$125,000.

The dock will be ready in January of next year.

Victoria. The Pacific Construction Company has received a contract from the Dominion Government for dredging 35,500 cubic yards of mud and silt from the harbor near the Cameron Lumber Company's mill.

J. P. Forde, federal works engineer at Victoria, recently returned from investigating a possible new port site at the head of Glacier Bay, which would give navigable water into British Columbia territory at the south end of the Alaska panhandle. The Grand Pacific Glacier has receded 65 miles in the last 130 years, thereby forming a new waterway at this point. If practicable, a port will be established at Glacier Bay and rail connection made with the Yukon, thereby eliminating the necessity for Canadian goods going into the Yukon to pass through Skagway and American territory.

Japan. Official permit has been granted for the construction of a harbor in Choshi, one of the largest fishing towns in the country, to cost about 7,000,000 yen.

Hawaii. Shipping at four principal Hawaiian ports gained 9 per cent during the year ended June 30. Vessels entering the port of Honolulu totaled 758 of 5,970,095 gross tons, compared with 737 vessels of 5,478,578 gross tons the previous year. Entrances at Hilo totaled 148 ships of 1,045,027 gross tons, compared with 778,912 the previous year, at Kahului 117 vessels of 740,684 gross tons, and at Port Allen 43 ships of 237,331 gross tons. These figures do not include island coastwise and government vessels.

California

Crescent City. The Congressional Rivers and Harbors Committee recently visited Crescent City and were strongly urged by the citizens of California and the counties of Southern Oregon to urge the completion of the breakwater at the harbor by the Federal Government.

It is reported that G. D. Grant is to build a wharf to cost \$17,000.

Redwood City Chamber of Commerce is raising funds for a survey of its harbor and the industrial

possibilities of this section, with a view to laying channel dredging plans before the next Congress.

San Francisco. The prospectus of a new port and industrial development south of San Francisco in San Mateo county, adjoining Belmont and San Carlos, has been made public. The San Francisco Bay Terminals Company is the name of a company formed to develop about 400 acres on the San Mateo shore, which will be known as Port San Francisco. E. B. DeGolia of San Francisco is president, and the company is composed of San Francisco, San Mateo, and Los Angeles men. Frank G. White, chief engineer of the San Francisco Harbor Board, has been retained to direct the engineering work, and it is reported that the United Dredging Company has a contract for dredging a channel 30 feet deep and 500 feet wide from deep water in the Bay four and a half miles into the industrial site, with turning basins.

Oakland. For several months past the City of Oakland has employed the services of three prominent Pacific Coast harbor engineers to survey the inner and outer harbors and to make recommendations for the development of the harbor in keeping with the growing importance of Oakland as an industrial and shipping center. The engineers are Charles D. Marx of Stanford University, C. B. Hegardt of Portland, and Charles T. Leeds of Los Angeles. Their recommendations for the development of this harbor are briefly as follows:

1. Outer harbor—1700 foot wharf with 1500 foot transit shed and necessary tracks and roadways; estimated cost, \$1,470,000.

2. Inner harbor—A double pier at Grove street, with 1700 feet of berthage and 168,000 square feet of transit shed, and a double pier at Clay street with 1500 feet of berthage and 126,000 square feet of transit shed, with necessary roadways, trackage and approaches; estimated cost, \$2,664,600.

3. Brooklyn Basin Mole Pier—3500 feet berthage space, 600,000 square feet transit shed area, with necessary roadways, approaches, and trackage; estimated cost, \$3,820,000;

4. Fireboat and house; estimated cost, \$250,000;

5. Warehouse and, or cold storage plant; estimated cost \$500,000;

6. Miscellaneous dredging; estimated cost, \$250,000;

7. Contingencies, 10 per cent, \$905,460.

A bond election has been called for November 10 for \$9,900,000 to provide funds. The board of consulting engineers will later make a more complete report, which will recommend the work most necessary to the business of the port and that which should be undertaken first.

The Federal government is now engaged in dredging Oakland inner harbor to provide sufficient depth for deep-sea vessels.

Long Beach. Work has been started at this point on the \$3,000,000 breakwater and mole project, which is a part of the extensive port development to be undertaken jointly by Long Beach and Los Angeles harbors with the aid of the Federal government in dredging operations and construction of the breakwater.

Los Angeles Harbor. The Union Pacific Railroad has recently completed a large water and rail terminal on Terminal Island. A passenger terminal will be built as a part of this terminal, and will be operated in conjunction with one of the leading passenger and freight steamship lines.

Work will soon start on a marine lumber terminal by the Los Angeles Harbor Board. This will be at Berth 228 A and B. The dock will be 764 feet long, 65 feet wide, and will cost approximately \$148,000.

The Union Oil Company has announced that they contemplate the erection of a new marine terminal in West Basin to cost about \$750,000.

The North Pacific Construction Company were awarded contract as general contractors for the construction of a viaduct on Dominguez Creek, on a bid of \$320,441. This viaduct is to provide better rail and truck facilities into the harbor area. It will include six tubes in its under structure; railway lines will pass through four of these, while the remaining two will be used to care for flood waters in the creek during the rainy season.

Newport Beach. Harbor bond election to vote \$1,200,000 for port improvements at Newport Beach-Balboa will be held next April by Orange County.

Improvement of the Port of La Libertad, Salvador, including a breakwater, concrete piers, warehouse and storage facilities, etc., is planned. An American engineer is now in Salvador investigating the possibilities of the port. About \$3,000,000 would be required for the breakwater and an additional \$2,000,000 for the remaining improvements.

Monterey has engaged engineers to draw up plans and recommendations for a municipal wharf to accommodate deep sea vessels. The wharf, as proposed, will extend into Monterey Bay 1125 feet to deep water from Figueroa street. The cost would be about \$250,000, and a bond issue will shortly be proposed to cover the expense.

Richmond. The citizens of Richmond voted \$79,000 in bonds for the erection of a 500-foot wharf on the inner harbor. Contract was awarded Tibbitts-Pacific Company on a bid of \$64,770.

Standing by the Standard

(Continued from page 522)

the crew would have drowned to a man. During this same gale the steamers San Gabriel and another steamer were lost with all hands, and many other stout ships were badly damaged. After arriving at Acapulco more stable repairs were made and the Richmond went on to Panama, where she was made as new again.

The Standard Oil Company has a policy of caring for faithful employees, and it is good to know that Captain Kirkwood now enjoys a generous pension from the company. The first mate who was with him at the time of the storm is now captain of the Yankee Arrow, while

John Ober of the Barge No. 95 is captain of the tanker J. A. Moffett; Ben Nagle, who was engineer on Barge No. 95, is now chief on the El Segundo; and sturdy and hale Chief Gorman is still in the Richmond. A talk with any of these men brings out the fact that they make light of the whole business, seeming to consider it all in the day's work. However, it is due to the policies of the Standard Oil Company that such service is so willingly given. While the participants may not think so, such acts show heroism as well as romance in battling against heavy odds and winning out.

Marine Insurance

Developments of the Month

By CHARLES F. HOWELL, Contributing Editor

PIER fire hazards are seriously engaging the attention of the people of New York City, largely because they have recently had another practical demonstration of the very sizeable menace they can be made to represent. Reports of inspectors and fire department officials as to the circumstances of the burning of Pier 95, at the foot of West 55th Street, have now been submitted, and conclusions are being drawn from this data by marine and fire underwriters. Increased interest in dock hazards at this time arises in part from this loss and also from the more costly destruction of cargo and wharf property which occurred, almost contemporaneously, at the foot of Atlantic Street, in Boston.

Chief Inspector William B. White, of the New York Board of Fire Underwriters, in his report on Pier 95 fire calls attention to the danger in not providing a fire-resisting covering over a pier deck of combustible construction—but he adds, rather hopelessly, that this is no new suggestion. He points out that in this case the plank deck was covered with concrete and asphalt, except in the small space beyond the pier shed at the river end. It was at this point that the fire originated, and Inspector White believes that the initial spark, from whatever cause, undoubtedly found its way into the crack between the planking and smoldered for some time. Once started, the fire spread with great rapidity because of the accumulation of splinters and finely divided wood dust that invariably cover the supporting members underneath the pier deck. "The fire seems clearly to demonstrate," says the Inspector, "the necessity of following modern fire protection measures in the construction of piers." He is convinced that the fire could have been controlled with far less damage had

SUMMARY

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Ship Repairers' Liability

An Open Sea Cock

Erie Canal Problems

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Read and Learn

there been fire stops installed on the under side of the pier deck, and the space underneath the pier deck made available for the use of the firemen by the installation of proper fire hatchways. Both of these items are a part of the Regulations of the National Fire Protection Association for "Pier Construction;" the first, to prevent the spread of fire, and the second to permit of the firemen gaining access to the seat of the fire.

Marine underwriters, as well as fire underwriters, are of the opinion that a dropped cigarette caused the fire, by falling between the joints of the wooden planking in the floor at the river end of the pier and igniting the timber which was more or less oil-soaked from drip in fuel loading of the oil-

burner Conte Verdi, which narrowly escaped destruction. A rough estimate of the damage to the pier is \$100,000.

There is a marine insurance phase to incidents of this character that is worthy of consideration. Originally the marine insurance contract was limited to strictly maritime risks, and covered nothing on shore. The great London fire of 1666 led to a demand by merchants for the protection of goods against fire while on docks, before loading into the vessel and after discharge. The marine underwriters saw that if they ignored this opening for more business it would be promptly seized upon by the rapidly growing fire companies, so they granted the coverage for an additional premium. This was the first step in the evolution of the original marine policy into the broad transportation cover of today.

Then came the rapid expansion of overseas trade, along with increased competition in marine insurance, with the result that the marine policy was gradually widened in scope to cover floods, collapse or subsidence of docks, fresh water, and the various other features so well known in the market at the present time. The latest demand for marine protection has arisen from the recent earthquake experiences in Japan and the United States, and an extension in cover along this line may be expected.

Warehouse-to-warehouse clauses extend the cover of the marine policy beyond the piers at waterside, making the attachment and termination points of the insurance the respective warehouses of shipper and consignee. It adds no insured perils to the policy. The shore risk clause, which is included in most marine insurance contracts, defines the risks which the under-

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writer assumes on shore. If this clause limits the protection on docks to fire, flood and collapse of piers, the warehouse clause will not serve to extend the policy to insure against earthquakes, fresh water, etc.

So far as docks are concerned it may be pointed out that they are usually insured with fire companies, but the goods on them, if in transit, are protected under marine policies. Goods held on piers or in general stores or in other warehouses for storage purposes are not "in ordinary course of transit" within the meaning of that term in the warehouse clause. They must be specially provided for if they are to be insured under the marine policy.

Limiting Shiprepairers' Liability

It appears to be slow work to reach a satisfactory compromise in the controversy between shiprepairers, owners, and underwriters with regard to permitting some sort of liability limitation for the yards. The latter are standing out for a limit of \$100,000, but the others are as determined not to allow it. It may not be settled before the close of the year.

The matter came to a head when the New York and New Jersey Dry Dock Association proposed inserting in their contracts a clause limiting their liability, as regards damage to vessels under repair by them, to a maximum of \$100,000. They wish to bring to their side the yards of the Pacific Coast as well as those of the United Kingdom. This now famous clause reads as follows:

"The contractor shall not be liable, directly or indirectly, in contract, tort or otherwise, to the vessel or cargo or their respective owners, charterers, underwriters

or concerned, for any damage to able stores or cargo, or any consequences thereof, unless such damage is caused by the negligence of the contractor or its employees, and the vessel or its equipment, moving in no event shall the contractor's total liability for such negligence exceed the sum of \$100,000."

Naturally, ship owners and marine underwriters made instant objection to such a proposition. Finally it was agreed that the matter should be made the subject of a general conference on the part of all interested. To this end three committees were appointed for such conference work—one of ship repair men, one of ship owners, and one of underwriters. The underwriters' committee consists of Charles R. Page, chairman, Douglas F. Cox, and Lawrence J. Brengle.

There have been several meetings of this tri-committee during the last half year, but all that has been accomplished has been to persuade repair men to postpone action as regards the inclusion of the proposed clause in their contracts.

What are the arguments, pro and con? The repair men insist that other shipping interests enjoy a limitation of liability and that they should too. They feel that the insurance end of the problem carries with it a disproportionate burden. In the past it has been the custom for shiprepairers to carry insurance on vessels undergoing repairs in their plants; they argue that as the policy has to be in a sum somewhat near the value of the vessel, if full protection is desired, the cost, in instances, would more than absorb the possible profit on the job. "It is true," they state, "that a ship repairer can insure against this liability, but it is manifestly unfair that he should do so, when the ship is already insured."

The underwriters' position is that the repair men should insure their liability and charge the premium to the ship owners. They argue that the yards are no more entitled to a limitation of liability than are other crafts and businesses which do not have it. That there ought to be a penalty for inefficiency or negligence. The prevailing practice is for underwriters to issue a blanket policy to the yard covering damages to any and all vessels under repair there. The rates asked for this protection have not been criticized as excessive.

As a matter of fact, the underwriters are in position to have the last word. They could easily decline to make returns of premiums for laid-up vessels under repairs, or even charge an additional premium.

The Lakeland Case

No marine disaster on the Great Lakes for years past has excited more interest among underwriters than that of the steamer *Lakeland*, which went down in thirty-five fathoms in Sturgeon Bay, December 3, 1924. Reports have now been submitted by a divers' operating crew employed by underwriters to locate and examine the wreck. The steamer was heavily insured. There was about \$35,000 on the cargo of automobiles, which has been paid. The hull and disbursements insurance totalled about \$360,000, but the market value of the vessel was far less than that. Offers made by other vessels to tow her into shallow water had been declined, and this, with other circumstances of her sinking, aroused suspicions on the part of the insurers and they decided to investigate the occurrence thoroughly.

It took months to assemble and equip with the latest diving appar-

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atus an expedition that could adequately handle a wreck lying two hundred feet below the surface, but this was eventually accomplished and the work began on August 17 of this year, and continued until September 7. The United States Navy loaned the expedition the only suitable decompression chamber in the country, as high air pressure methods were the only ones that would enable the divers to make the exceptional depth. Numerous novel features were introduced, such as helmet telephonic communication with the attendant barge moored directly above the wreck, the use of powerful electric lights under water, a submarine burning outfit, etc.

The expedition was a brilliant success. The seacock of the Lake-land was found to be wide open, as was also the valve controlling the engine room suction. It was definitely proved that, at the time the steamer sank, water entered the engine room in large volumes through both seacock and bilge suction. It has cost the underwriters a pretty penny, but it is going to take a lot of work to get that \$360,000 of insurance out of them.

Erie Canal Enquiry

Marine underwriters of the Eastern market have been greatly interested in the series of public hearings held during the last few months by a special survey commission of thirteen members appointed by New York State authorities for the purpose of examining into the condition of the New York State Barge Canal, popularly known as the Erie Canal, and report with recommendations to the next legislature what ought to be done to increase its efficiency and attract traffic to it. The state has spent more than \$125,000,000 on the canal, and the results to date have been very trifling in comparison.

One of the foremost shipping men of the East, in an interview in *The Weekly Underwriter*, shows the advantages, from an underwriting angle, of the development of the canal by the state, or preferably by the Federal Government, rather than turn to the suggested St. Lawrence route. He says there is 100 per cent more business available via the Erie Canal than by the St. Lawrence, which means twice the premium volume for the insurance men. "Underwriters," he says, "very begrudgingly accept business via the St. Lawrence, even in spite of the fact that they charge us one-half of 1 per cent extra on hull valuations for every trip. That charge is a serious one, and enters largely into our estimates of profit." Due to its more southerly location the barge canal has a longer operating season by thirty days than the St. Lawrence, fifteen in the spring, and fifteen in the fall; which means twenty per cent more efficiency. Furthermore, he says, southern territory—our South Atlantic coast, Central and South America, and a part of the Gulf region—is better served by the Erie Canal; freight, southbound by steamer, takes ten days longer when sent via the St. Lawrence. And, finally, as Federal Government plans have already been arranged for a deepening of the Hudson River to twenty-five feet all the way to Albany, the Eastern terminus of the canal, it would be the wisest thing to make the canal twenty-five feet deep and widen it where necessary, and thus secure an ocean route from the Great Lakes in United States territory entirely.

Marine Insurance Definitions

Familiarity with the following terms in daily use in marine insurance is essential to an intelligent understanding of underwriting

operations. A prominent fire insurance company, the Glens Falls, has thought them of sufficient importance to publish them in pamphlet form.

Venture is a term used to embrace the three elements of any commercial voyage — hull, cargo, and freight.

The word hull means the entire ship or refers to ships in the abstract.

Cargo is the ship's load of merchandise or other articles of shipment.

Freight has reference to the remuneration for carrying cargo other than to the cargo itself.

Average in all cases means loss.

General Average is a loss, damage, or expense deliberately incurred by responsible parties for the preservation of the venture during an emergency. For instance, the casting overboard of a part of the cargo or rigging or other equipment of the ship to lighten or trim the vessel when it seems doomed, would be placed under the head of general average. The expense of towing a crippled vessel into port would also be in this class. Such losses are assessable upon all of the interests saved by such a sacrifice—that is, the entire venture—hull, cargo and freight.

Particular Average is any loss applying only to a particular interest and not affecting the rest. Damage by sea water of a portion of the cargo would be a particular average, adjustable between the shipper and his insurers, subject, of course, to the liability of the ship's owners.

The illustration of general average, given above, is a perfect example of jettison, which word may often appear in marine transactions.

Bottomry Bonds were the earliest form of insurance, although, strict-

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ly speaking, not insurance at all but loans made to finance a voyage or to insure its continuation if the ship was in distress, physically or financially. The ship was used as security on such loans, which were

payable when the voyage was completed.

Respondentia Bonds were similar bonds with the cargo as security. Today, both of these forms are practically obsolete.

F. O. B. (Free On Board), and F. A. S. (Free Along Side), are shipping terms warranting the shipment to be at the risk of the shipper until it is on board the ship or lying alongside the same. C. I.

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F. (Cost, Insurance, Freight), is a similar term whereby the shipper or consignee agrees to assume all risks and charges until the shipment arrives at its destination.

An Abandonment is the relinquishing of an owner's rights in a disabled or otherwise incapacitated vessel or cargo in favor of the insurer, thereby establishing a claim for a total or constructive total loss.

A Total Loss is one in which the insurable interest has entirely disappeared. A Constructive Total Loss is one in which the insurable interest has become so damaged

or imperilled that to restore it to its former status would involve an expense in excess of the recoverable value of the restored venture.

Salvage may refer to property which has been recovered in whole or in part from a wrecked ship, to the act of recovering such property, or to the moneys paid out for such recovery.

Barratry is the criminal act of a ship's master or other officer which might result in loss or damage to a venture; e.g., deliberate and willful damage or destruction of a ship.

Fixtures, Charters, Sales

October 13, 1925.

SINCE our last report, dated September 16, the following steamers are reported fixed with grain to the United Kingdom and/or Continent: British stmr. Hindustan, 32/6, Dec.; British stmr. Rudby, Nov./Dec. loading, rate and charterers not mentioned.

For grain to Shanghai the following fixtures are reported: Norwegian stmr. Storviken, \$5, Balfour, Guthrie & Co.; British stmr. Poleric, \$4.75, Nov., Balfour, Guthrie & Co.; Japanese stmr. Koshin Maru, \$5, Nov., Connell, Bros.; Norwegian stmr. Erviken, Oct., rate and charters not mentioned; British stmr. Cornish City, \$4.87½, Nov.

For lumber to Australia the following fixtures are reported: British stmr. Wentworth, option Cuba, J. J. Moore & Co., Inc.; Norwegian stmr. Hardanger, \$12, Sept., same charterers; Norwegian stmr. Hallgrim, Oct./Nov., same charterers; Japanese stmr. Ishikari Maru, \$13, Nov., same charterers; Norwegian motorship Gisla, Oct., same charterers.

The British stmr. Buchanness is reported fixed from the North Pacific to China at \$9.50, Oct.-/Nov. loading, charterers not mentioned.

The British steamer Golden Sea is reported fixed for South Africa by J. J. Moore Co.

For lumber to the Atlantic seaboard the following steamers are

reported fixed: American stmr. Onondaga, Oct. loading; American steamer Sudbury, \$15.50, Oct.; Japanese stmr. Egypt Maru, Sept.; Canadian Trading Co.; American stmr. Oneida, Nov., Port Blakely Mill Co.; British m.s. Vinemoor, rate not mentioned, W. L. Comyn & Company.

The following steamers have been taken on time charter: m.s. Chastine Maersk, one trip Pacific Coast to Australia, Balfour, Guthrie & Co.; British stmr. Corinthia, inter-coastal trade, one round trip, delivery U.S. Atlantic, 87½c.; Sept.; British stmr. Sheaf Mount, Pacific lumber trade, 6 months' time charter, 62½c, delivery Comox, B.C.; re-delivery United States, Oct.; British stmr. Silksworth, North Pacific to Australia, lumber, 4/3, time charter, J. J. Moore & Co., Inc., Nov.; British stmr. Baron Maclay, North Pacific to Australia, 4/3, by W. L. Comyn & Co.; British stmr. Argalia, North Pacific-Australia, H. R. MacMillan Export Co., Ltd., 4/3.

The following sales have been reported: American stmr. Mennon, U.S. Shipping Board to Columbia River Packers' Asso.; American tanker Solano, Pacific Mail S.S. Co. to Associated Oil Co.; American schr.; Betsy Ross, Foss Launch Co., to Washington Pulp Paper Co.; American bg. Helene, Matson Navigation Co. to Inter-Island Steam

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Navigation Co., Honolulu; American tug Maoi, same; American stmr. Palias, U. S. Shipping Board to Jas. Griffiths & Sons; American schr. Eric, J. E. Shields to Guy Grant; American tank steamer Dayton, J. M. Botts to Olympic S.S. Co.

The following tanker fixtures are reported: American taker Illinois, California to New York, 65c clean, Oct.; American tanker New York, same.

PAGE BROS., BROKERS.

American Shipbuilding

A Monthly Report of Work in Prospect, Recent Contracts, Progress of Construction and Repairs

Edited by H. C. McKINNON

A decline of more than 150,000 gross tons in world ship construction during the past three months has brought the total tonnage building to the lowest level since the late war, says a statement just issued by Lloyd's Register of Shipping, covering returns from all the maritime countries for the quarter ending September 30. While general ship construction has been decreasing during the current year, with the exception of motor vessels, the present return shows a decline in that line also, representing about 40,000 gross tons less than in the quarter ending June 30 last.

The only increases in work in hand shown by the present returns, says Lloyd's Register, are those of Italy and Holland; Great Britain and Ireland show a decrease of 84,000 gross tons, France of 19,000 tons, Denmark 7000 tons. The construction in the shipyards of the United States declined 22,000 tons; but Germany showed the greatest drop, one of slightly more than 100,000 tons.

It is to be noted that a year ago Great Britain and Ireland were building 387,670 gross tons of vessels equipped with internal combustion engines, and the other countries combined, 552,229 gross tons, a world total of 939,899 tons, or nearly 150,000 tons less than at present. It is also to be noted that while at September 30, 1924, motorship construction represented only 36 per cent of all shipbuilding under way, the proportion had grown to 48 per cent on June 30 last, and to 49 per cent at September 30 last.

The returns show that of the construction work being done in all countries combined, that under the supervision of Lloyd's Register, and intended to be classed with that society, aggregates 1,503,252 gross tons, of which 792,589 tons is in Great Britain and Ireland. More than 78 per cent of the construction in Great Britain and Ireland, therefore, is being supervised by Lloyd's Register, and about 68 per cent of the entire world's output of merchant vessels, is being supervised by Lloyd's Register throughout the world.

A somewhat encouraging feature of the returns from Lloyd's is that

the new work begun during the last quarter was somewhat in excess of the launchings, while in the previous quarter the reverse was the case.

ELECTRICAL EQUIPMENT ON MALOLO

The steamship *Malolo*, building for the Matson Navigation Company at Wm. Cramp & Sons Ship and Engine Building Company, Philadelphia, will have a completely electrified cooking installation in galleys and pantries. The main galley of the vessel will have two banks of ranges. There will also be two complete electric broilers with warming compartments. In the crew's galley there will be a two section electric range. The bakery and the pastry room will each have an electric oven. The coffee pantry will be equipped with two electric griddles, while the smoking room and deck pantries will each have one electric griddle. All electrical cooking devices will work on 230 volt direct current.

An ocean-going, electric-power laundry and tailor shop that will stand comparison with the most up-to-date establishments on dry land will also be a part of the equipment of the *Malolo*.

The laundry will be equipped to handle the general laundry requirements of the ship and all the personal laundry of the passengers, officers, and crew. The tailor shop will be able to take care of all the repairs, scouring, cleaning, and pressing of garments.

All motors for both the laundry and tailor shop will be 230 volts, direct current, semi-enclosed, and of a self-ventilated or water-tight type.

Another significant feature of the *Malolo's* equipment will be the soda fountain, which will take the place of the bar found on all American ships prior to January 16, 1920. The counter will be 28 feet long and of teak, the metal work will be silver plated, and the whole design of the fountain's woodwork will harmonize with the decorative scheme of the room.

Work in Prospect

Albert Lawson, naval architect and marine surveyor, 1 Drumm

Street, San Francisco, has issued plans and specifications for a coast-wise passenger and freight vessel for the Ynchausti Steamship Co., of Manila, Philippine Islands. Plans and full description will be found on another page of this issue.

Another important job on which bids will be asked during October from Pacific Coast yards is that of building one and possibly two new steel, turbo-electric ferry boats for the Key System Transit Company, San Francisco. Hibbs, McCauley and Smith, 311 California Street, are the designers, and plans and general description of the boats are also printed on another page of this issue.

Still another shipbuilding prospect on which San Francisco architects are working is one, two, or three automobile and passenger San Francisco Bay ferryboats for the Golden Gate Ferry Company, San Francisco. The building of these boats will depend to a large extent on the outcome of an application of the Golden Gate Ferry Company now before the State Railroad Commission for permission to operate ferry service between San Francisco and Berkeley. If built, the ferries will be wooden hulls, of diesel-electric propulsion. The boats will be equipped primarily for automobile transportation. Two diesel-electric ferryboats now operated by this company were built by the James Robertson Shipyard, Alameda.

Lee, Brenton & Wayland, naval architects, 58 Sutter Street, San Francisco, are designing a palatial diesel yacht for Don Lee, Cadillac Motor Car Agency, San Francisco.

The Clyde-Mallory Line, of New York, has announced plans to build two express passenger and freight vessels for the New York-Miami run. H. H. Raymond is president. Theodore Ferris, naval architect, 30 Church Street, New York, is the designer. The boats will be 408 feet over-all, 62 feet beam, will be twin screw, oil burning steamers of 8500 tons displacement. Accommodations will be pro-

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vided for 780 passengers, and the vessels will be able to make a speed of 18 knots. This line recently put into service two beautifully equipped passenger liners, the Seminole and Cherokee, built by Newport News Shipbuilding and Drydock Company.

* * *

The Sydney Ferries, Inc., Sydney, Australia, has asked for bids for two large automobile ferryboats for Sydney harbor. Bids will be accepted from American, British, and Australian yards.

* * *

After a conference at San Francisco lately of the United States Coast Guard and California prohibition Administrator, it was decided to appeal to the Treasury Department for the construction of additional rum runner chasers to protect the California coastline.

* * *

Rear-Admiral W. S. Benson, in a report to the United States Shipping Board, has recommended the construction of two 30,000-gross tons, 20-knot passenger ships for operation as companion ships to the Leviathan.

* * *

Recent Contracts

Bethlehem Shipbuilding Corporation, Wilmington, Delaware, has an order for two ferry steamers for the Philadelphia and Reading Railroad. They are to be 198 feet between perpendiculars, 35 feet beam, and 10 feet draft of 1100 indicated horsepower.

Manitowoc Shipbuilding Corporation, Manitowoc, Wisconsin, has an order for a double-ended car ferry for the Wabash Railroad for use on the Detroit River. The boat will be 370 feet over-all, 65 feet beam, and 21 feet 6 inches depth,

and will be propelled by four compound engines of 1000 horsepower each.

Midland Shipbuilding Co., Ltd., Midland, Ontario, will build a single deck freighter for the Great Lakes Transportation Co., Ltd., Midland, Ontario. The vessel will be 633 feet over-all, 70 feet beam, and 29 feet depth. Triple expansion engines will propel the vessel at 11 knots speed, developing 3000 horsepower. The deadweight capacity will be 15,000 tons.

Newport News Shipbuilding and Drydock Company, Newport News, Va., has several new orders. One is for two grain barges 150 feet long for the Pennsylvania Railroad. They have an order for a 50 foot barge for the Army Engineers at Norfolk. They also have orders for three diesel yachts for R. M. Cadwalader, Galen L. Stone, and E. S. Burke, Jr.

The Pusey & Jones Co., Wilmington, Del., will build two single screw passenger and freight steamers for the Baltimore and Philadelphia Steamboat Co., 219 feet between perpendiculars, 45 feet beam, 11 feet loaded draft, triple expansion engines, developing 14½ miles speed.

The Alabama Shipbuilding & Dock Company has a contract from the Tennessee Coal, Iron and Railroad Company for two steel barges, 140 feet long, 25 feet wide, and 9 feet deep, with double bottom and wing tanks.

St. Helens Ship Company, Portland, Oregon, has an order for a new lighthouse tender for the Columbia River. The boat will be 63 feet long, 16 feet beam, 7.6 feet depth, and will be propelled by 100 horsepower Washington-Estep diesel engine. The boat will cost \$23,430.

W. M. GUNDEL, President

GEO. RODGERS, Sec'y-Treas

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Keel Layings

Fireboat for City of Houston by Bethlehem Shipbuilding Corp., Wilmington, Oct. 5.

Freighter for U. S. Steel Corp. by Federal Shipbuilding & Drydock Co., Sept. 15; diesel-electric freighter for U. S. Steel Corp., Sept. 24.

Automobile and passenger ferry for Walkerville & Detroit Ferry Co., by Great Lakes Engineering Works, Oct. 5.

Yacht for Hany Payne Bingham by Newport News Shipbuilding and Drydock Corp., Sept. 21; Dorchester, passenger and freight steamer for Merchants' and Miners' Transportation Co., Sept. 10.

Launchings

Lexington, airplane carrier for U. S. Navy by Bethlehem Shipbuilding Corp., Quincy, Mass., Oct. 3.

Tug for J. W. Sullivan Co. by Bethlehem Shipbuilding Corp., Wilmington, Sept. 19.

Chamberlin by Nashville Bridge Co., Oct. 2.

Albany, ferryboat for New York Central R. R. by Staten Island Shipbuilding Co., Sept. 8.

Geo. T. Price, towboat for Kelly Transportation Co., by Charles Ward Engineering Works, Oct. 1.

Deliveries

Two barges to Standard Oil Co. (La.) by American Bridge Co., Sept. 22 and 30.

Four steel scows to City of Philadelphia by Wm. Cramp & Sons Ship & Eng. Building Co., Sept. 12 and Oct. 5.

Barge to Standard Sand and Gravel Co., Wheeling, W. Va., Aug. 31.

Gleneagles, freighter to Great Lakes Transportation Co., by Midland Shipbuilding Co., Midland, Ontario, Oct. 1.

William T. Collins, ferryboat, to City of New York by Staten Island Shipbuilding Co., Sept. 4.

Maurice Connelly, ferryboat to City of New York by Tebo Yacht Basin, Sept. 12.

Repair Awards

The Moore Dry Dock Company secured the contract to effect re-

pairs of the recent damages to the Matson steamer Wilhelmina. The damage was suffered when the vessel struck a bank near Crockett. Her stern post and frames were broken in the upper and lower parts and the rudder post and rudder also so injured that they will need complete renewal. The dry dock will do the forgings at the plant in Oakland, under the direction of that master smith Edwin Forrest. This will be one of the heaviest jobs of the kind ever done here. The dry dock company has agreed to have the steamer ready for sea in twenty-eight days time. Cost of the work will be about \$53,000. The next lowest bid was for \$66,000 and thirty days time.

Moore Dry Dock Company was awarded contract for damage repairs to the Standard Oil tanker W. S. Miller on a bid of \$3850. This company also has an order from the Standard Oil Company to make 11 large propeller hubs complete ready for installation on the different tankers of the company's fleet. The cost of this work will be \$11,107.

Bethlehem Shipbuilding Corporation, San Francisco, received contract for repairing the freighter Lena Luckenbach, which had her machinery damaged by rough seas. The bid for this work was \$19,493.

Los Angeles Shipbuilding & Drydock Corporation has been awarded contract by the Shipping Board for work of installing deep tanks for carrying coconut oil on eight vessels operated by Struthers and Barry. The cost of the work will be approximately \$100,000, and will be done on the West Ivan, West Cajoot, West Faralon, West Sequana, West Jester, West Prospect, West Chopaka, and West Carmona.

Shipyards Notes

Bruer & Siemer is the name of a new company which will engage in general boat building and repairs near Hunter's Point, San Francisco. A. H. Siemer was formerly a member of the firm of Anderson and Siemer, and recently severed connection with Mr. Ander-

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son and purchased the shop of Munder Brothers.

L. Cristofani, for many years foreman at Anderson & Siemer's yard, has been taken into the firm by "Pop" Anderson. Walter A. Anderson, "Pop's" son, is now a partner, and he and Mr. Cristofani will be the active members of this boat building and repair plant.

The Todd Shipyards Corporation recently announced the consolidation of three subsidiary plants. The Tebo Yacht Basin, Brooklyn, and the plant of the Todd Oil Burner and Engineering Corporation are now known as Todd Dry Dock, Engineering and Repair Corporation, with offices at the foot of 23rd Street, Brooklyn. J. Herbert Todd, former president of the Clinton plant, is head of the corporation as president; James McDonald, W. H. Smith, Joseph Hoag, Jr., are vice-presidents; J. L. Lowder is secretary; and Frank H. Reimers is treasurer.

The Monticello Steamship Company recently put into service on San Francisco Bay between San Francisco and Vallejo the remodeled passenger boat City of Sacramento, which was formerly the steamer Asbury Park. The boat was reconditioned at the Vallejo yards of the company.

Only one bid was submitted for the purchase of the seven United States Navy destroyers wrecked on the California coast near Arguello, and this was by Robert J. Smith, of Long Beach and Oakland, being \$1035 for the seven ships.

The plant of the Downey Shipbuilding Corporation, Staten Island, New York, was sold by auction during September for \$172,000 for equipment to Theodore Friedberg, and \$568,000 for real estate to Bayard F. Pope.

The Nilson Shipyard on Salmon Bay, Seattle, recently delivered to the Snow Creek Logging Company a staunch little tugboat the We-Go. The tug is 57 feet long, 14 feet beam, and is equipped with a 125 horsepower Washington-Estep diesel engine. Lee & Brenton, of Seattle, are the naval architects.

Moore Dry Dock Company, Oakland, California, has contract for nine spillway gates for Melones

dam project of Oakdale and South San Joaquin Irrigation Districts, California, value \$49,680.

The Folding Boat Company has moved from Kalamazoo, Michigan, to Oakland, California. This company manufactures small boats for river and lake sports. E. H. Harper is manager.

The Washington Iron Works of Seattle, Washington, manufacturers of the Washington-Estep diesel engines, and who have placed their engines in many Puget Sound craft in the last few years, have appointed G. F. Aston their Portland representative, with offices at 826 Northwestern Bank Building.

Albina Marine Iron Works, Portland, are building three all-steel barges for the Western Transportation Company, Portland. This plant recently launched a fuel oil barge for fuel tender for the United States Army Engineers' dredges on the Columbia River.

The Shipping Board has announced that all bids received for the Hog Island shipyard property have been rejected for reasons that the bids were either too low or did not qualify with the terms of the sale. The highest bid was by

Root-Cartier Co. of New York City, \$3,500,000, but this was not accompanied by a certified check for 5 per cent, which was one of the qualifications of the sale. The highest bid submitted which qualified with all the terms set forth by the Shipping Board was by Henry K. Fort, Philadelphia, which was for \$1,276,000.

Four wooden hulls, the last of the uncompleted wooden hulls built at Portland for the Emergency Fleet Corporation, were burned for their fasteners and other metal on October 1. These had been purchased by M. Barde & Son for \$2500 each.

The United States Coast Guard Service, Washington, D. C., will shortly issue plans and specifications for the coast guard cutter New Bear. This vessel will be June 8 the Coast Guard Service re-which has seen over forty years of service in Alaskan waters. On built to replace the cutter Bear, ceived bids on engines for the vessel. Low bid was submitted by the Worthington Pump and Machinery Company, which was \$71,610 for two 6-cylinder, 4-cycle, diesel engines of 600 brake horsepower each. Contract has not yet been awarded.

Progress of Construction

Pacific Coast

BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT Potrero, Works

Purchasing Agent O. W. Street
No name, hull 5527, diesel-electric tank barge for General Petroleum Corp.; 170 L.B.P.; 32 beam, 11-6 loaded draft, 9 mi. loaded speed; 920 D.W.T. 2 Atlas-Imperial diesel engs., 250 B. H. P. ea; keel Aug 24/25

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

No name, hull 44, barge for stock, 100 L.O.A.; 36 beam, 9-6 draft, keel Sept 10/25; launch Oct 10/25, est.

No name, hull 45, same as above; keel Sept 30/25, est; deliver Oct 10/25, est.

No name, hull 46, barge for Anderson Towboat Co., Seattle; 110 L.O.A.; 36 beam; 11-4 draft, keel Sept 14/25, est, deliver Oct 15/25, est.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION San Pedro, Calif.

Purchasing Agent L. A. Hanson.
No name, hull 47, straight stem and elliptical stern, one deck fireboat, for Los Angeles Fire Department, 93 ft 4 in LBP; 19 ft beam; 6 ft 6 in loaded draft, 17 mi speed, 900 SHP Winton gas engs., keel June 26/25; launched Oct 20/25, est.

NAVY YARD Puget Sound

Holland, submarine tender for government, 460 LBP, 61 beam, about 20 loaded draft, 16 K loaded speed, turbine eng 7000 IHP; two WT express type boilers, 10,000 tons disp, keel April 21/25 delivered April 26, est.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.

Three barges, for Patton Tully; 160x34x7 ft; deliver Nov/25, est.

Two barges for the Standard Oil Co. (La.); 275x52x9; delivered Sept. 22 and 30.

Thirty barges for the Ohio River Co.; 175x26x11; 10 delivered.

Twelve barges, Crucible Steel Co., 175x26x11; deliver Jan 1/26, est.

Twelve barges, T. C. I. & Ry. Co., 140x25x9; deliver Jan/26, est.

THE AMERICAN SHIPBUILDING COMPANY Cleveland, Ohio

W. H. Gerhauser, vice-president and director of purchases.

No name, hull, 791, bulk freighter, Pickands, Mather & Co., 580 L.B.P.; 60 beam; 20 loaded draft; 13 mi speed; 12,000 D.W.T.; 2200 IHP., trip. exp. engs.; 3 B. & W. boilers; keel Oct 10/25, est.

No name, hull 792, sister to above; keel Nov 10/25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N., launched Oct 3/25.

BETHLEHEM SHIPBUILDING CORP., LTD., BALTIMORE DRY DOCKS WORKS Baltimore, Md.

Hull 6132, dredge hull, Ellicott Machine Corp., 160 feet long; 40 feet wide.

Hull 6133, same as above.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT Wilmington, Del.

Hull 3496, tug, J. W. Sullivan Co., hull only;



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SAN FRANCISCO, CAL.

STATEN ISLAND SHIPBUILDING COMPANY

Staten Island, N. Y.

Purchasing agent: R. C. Miller.
William T. Collins, hull 755; ferryboat, City of New York; 151 ft long; keel Sept2/24; delivered Sept. 4/25.

No name, hull 757, sister to above; keel Feb 18/25.

No name, hull 758, sister to above; Keel Mar 27/25.

Albany, hull 756, ferryboat, New York Central R. R.; 210 ft long; keel Dec27/24; launched Sept 8/25.

SUN SHIPBUILDING COMPANY

Chester, Penn.

Purchasing Agent: H. W. Scott.
Hull 85, carfloat, Pennsylvania Railroad; 358 LBP; 47 ft 4 in beam; 12 ft 6 in depth; keel July29/25; launch Nov30/25, est; deliver Dec 24/25, est.

Hull 86, sister to above; keel Aug1/25; launch Dec16/25, est; deliver Jan9/26, est.

Hull 87, carfloat, Pennsylvania R. R.; 250 LBP; 34 beam; 9 depth; keel July27/25; deliver Nov1/25, est.

Hull 88, sister to above, keel Aug3/25; deliver Nov16/25, est.

Hull 89, carfloat; Pennsylvania R. R.; 145 LBP; 36 beam; 10 depth; keel Aug10/25; deliver Nov 17/25, est.

Hull 90, sister to above; keel Aug17/25; deliver Nov31/25, est.

Hull 91, carfloat, Pennsylvania R. R.; 230 LBP; 38 beam; 10 ft 6 in depth; keel Aug31/25; deliver Nov24/25, est.

Hull 92, carfloat, sister to above; keel Sept7/25; deliver Dec10/25, est.

Hull No. 93, tug, for Pennsylvania R. R.; 116 x24x13-8; keel Sept14/25; deliver Nov25/25, est.

TODD ENGINEERING, DRYDOCK & REPAIR CORP.

Brooklyn, N. Y.

Maurice Connelly, hull No. 35, ferryboat, City of N. Y., 148 L.B.P.; 53 beam; 9-9 load draft.; keel Feb15/25; launched Apr23/25; delivered Sept 12/25.

John H. McConly, hull No. 36, ferryboat, City of N. Y., sister to above; keel Feb19/25; launch June14/25.

THE CHARLES WARD ENGINEERING WORKS

Charleston, W. Va.

Purchasing Agent: E. T. Jones.
Geo. T. Price, hull 37, tunnel propeller towboat,

Kelly Transportation Co., 126 LBP; 26 beam; 5 doaded draft; 2 diesel engs. 360 BHP each; keel June 17/25; launched Oct. 1/25.

No name, hull 38, sternwheel towboat, The Ohio River Co.; 145 LBP; 32 beam; 5 draft; recip 700 IHP eng; return tubular boilers, 42 in x 26 ft; keel Oct15/25, est.

No name, hull 39; steel barge, Kelly Axe & Tool Co.; 150 long, 26 beam; 8 draft.

No name, hull 40, sister to above.

No name, hull 41, sister to above.

No name, hull 42, sister to above.

No name, hull 43, sister to above.

No name, hull 44, sister to above.

No name, hull 45, sister to above.

No name, hull 46, sister to above.

No name, hull 47, sister to above.

Repairs

BETHLEHEM SHIP BUILDING CORP., LTD., UNION PLANT

San Pedro Works

Drydock and repairs: stmr. Yorba Linda, India Arrow, Newport, bark Gratia, schr. Jane Nettleton, m. s. Los Alamos, barges S. F. 1 and 2. Misc. repairs: stmr. Cathwood, City of Los Angeles, Stockton, Lewis Luckenbach, F. J. Luckenbach, Derroche, Coalina, Tamalpais, Geo. Allen, Calawaii, Ecuador, Yankee Arrow, Liebre, Majove, launches Candaoha, Estrella, tug Restless.

Potrero Works

Drydock, clean, paint: Gratia, Everett, Guerrero, Idaho, Lena Luckenbach (also install 2 mang. bronze blades), Georgian, Noyo, George Allen. Drydock, paint, engine, boiler and hull repairs: Calistoga, China Arrow, Argyll, Oaxaca. Engine, boiler, hull repairs: Sumanco, Sidney M. Hauptman, Lancaster, Kewance, President Wilson, Maui, Maunganui. Engine repairs: Lewis Luckenbach, Ecuador. Winch repairs: Manchuria, Caroline. Propeller repairs: Sinaloa, Charles H. Cramp, Misourian, Retube condenser: Point Judith. Misc. repairs: George L. Olson, San Diego, Cathwood, Dorothy Luckenbach, El Capitan, Liebre, Mojave, Horace X. Baxter, Yorba Linda, Restless, Hercules, Port Saunders, Finland, Doris Crane, Matsonia, Dionysius Statlatos, Makena, Tongking, Virginian, Olinda, Erskine M. Phelps, Waioapu, Edgar Luckenbach, Lillian Luckenbach, Montanan, Iowan, Martha Buchner, Makaweli, Chihuahua, Tascalosa, Minnesotan, Panaman, Piave II, Texan, Nebraskan, Axel Johnson. Drydock for survey, draw tailshaft: President Adams.

CHARLESTON DRY DOCK & MACHINERY COMPANY

Charleston, S. C.

General reconditioning: stmr. Magmeric (new tail shaft), Sundance (new tail shaft; turbine repairs). Turbine and misc. repairs: Shickshinny, Coldwater. Seasonal repairs: Carolinas, Tulsa, Sacandaga.

COLLINGWOOD SHIPBUILDING COMPANY

Collingwood, Ontario

Lengthen by 144 feet: stmr. Glenledi. Bottom damage repairs, tail shaft drawn for examination; misc. repairs: stmr. Valcartier.

LOS ANGELES SHIPBUILDING & DRYDOCK CORP.

San Pedro, Calif.

Clean, paint, general repairs: Emidio, Mexico (bearings rebushed), Phoenix (rudder stock faired, eng. and misc. repairs), S. O. barges Pico and No. 7, stmr. Montebello, West Ivan and La Brea, (also sea valves overhauled, anchor and cables repaired.) Shaft bearings realigned: M. S. Vaquero. Survey after grounding: tug Peacock.

UNITED STATES NAVY YARD

Bremerton, Wash.

Dock and misc. repairs: Arizona, Henshaw, Zeilin, Marcus, Selfridge. Misc. repairs: Oklahoma, Percival, Farquhar. Misc. repairs incidental to operation as district craft: Tatnuck, Swallow, Challenge, Pawtucket, Sotoyomo.

VICTORIA MACHINERY DEPOT CO.

Victoria, B. C.

Dock, engine and boiler repairs: stmr. Tees, tug Olive M. (also crankshaft repairs and fit new tailshaft). Dock, clean, paint, draw and repair tailshaft: stmr. Otter, Theipval (also boiler repairs), Island Princess (also make and fit new shaft coupling and propeller). Engine and deck repairs: stmr. Gray. Make and install new fuel oil tanks for Victoria Tug Co.'s tug. Dock, clean, paint, change damaged propellers, deck repairs: Princess Mary. Boiler repairs: tug Soray.

YARROWS, LIMITED

Victoria, B. C.

Two new C. I. propeller blades, five new man-ganes: bronze propeller blades: Mina Brea. Drydock, clean, paint, underwater repairs, seacocks overhauled, etc. stmr. Canadian Miller. New tailshaft and engine repairs: Princess Beatrice. Docked, changed propellers: tug Burrard Chief. Boiler repairs: tug Sadie. Derrick repairs: C. G. S. Newington. Misc. repairs: stmr. Prince Albert, car ferry Canora.

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Pacific Steamship Co.	Ames Terminal Co.
Pacific Lighterage Co.	East Waterway Dock & Warehouse Co.
Matsen Navigation Co.	J. C. Hayden Dock Co.
McCormick Steamship Co.	Baker Dock Co.
Port Commission Docks, Seattle	A. & P. Products Corp.
Port Commission Docks, Tacoma	Pacific American Fisheries
Port Commission Docks, Portland	Oriental Dock Co.
	Dodwell Dock & Warehouse Co.

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Personal Paragraphs and Items of Interest

AXEL JOHNSON ON PACIFIC COAST

THE new motorship Axel Johnson, recently built for the Johnson Line of Stockholm, Sweden, by the Gotaverken Shipyards, is making her maiden voyage in the Pacific Coast-European service, arriving at San Francisco on September 29. W. R. Grace & Co. are general agents for the Johnson Line on the Pacific Coast. The Axel Johnson is a sister ship of the Annie Johnson, now almost completed. Hundreds of shippers and engineers visited the motorship in all the Pacific Coast ports and were all favorably impressed with her accommodations for both passengers and freight.

TWENTY YEARS WITH WESTINGHOUSE

Henry Hamilton Seabrook, Philadelphia district manager of the Westinghouse Electric & Manufacturing Co., was recently honored by his fellow workers on the attainment of his twentieth anniversary as an executive and his twenty-fifth year in continuous employment of the Westinghouse organization.

FOREIGN CREDIT INTERCHANGE BUREAU

James F. Abbott, former commercial attache to Tokyo, has joined the staff of the Pacific Coast division of the Foreign Credit Interchange Bureau and will act in the capacity of service manager. This organization is affiliated with the National Association of Credit Men, and has established offices in San Francisco. Its purpose is to aid Pacific Coast exporters in establishing desirable connections abroad and determining safe foreign credit risks. The San Francisco office is under the supervision of B. B. Tregoe, manager of the Western division of the National Association of Credit Men.

DIRECT TO MEDITERRANEAN

The General Steamship Corporation, as agents for the Navigazione Libera Triestina, recently inaugurated the first direct steamship service between the Pacific Coast and Mediterranean ports. The steamer Piave II. arrived in September and visited all the principal ports on the Pacific Coast, where she was favorably received.

OPEN BRANCH IN SOUTH

Ets-Hokin & Galvan, marine electric supply house of San Francisco, opened a branch store on October 1 at 240 Canal Avenue, Wilmington, Los Angeles harbor. Ralph H. Galvan is in charge of the Wilmington store, where he will superintend the electrical repair service and supply department conducted by this company.

S. F. HONORS BRITISH OPERATORS

The Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast were joint hosts recently at a luncheon at the Commercial Club, San Francisco, in honor of three Englishmen of world prominence. The guests of honor were Lloyd Sanderson, American manager of the Royal Mail Steam Packet Co. of New York; E. N. Griffith, manager of the General Steam Navigation Co. of London; and J. H. C. Bond, director of the New Zealand Shipping Co. Mr. Bond's son, the British consul, Mr. Crane, and A. G. Albertson, Pacific Coast manager for the Royal Mail Steam Packet Company, were also guests.

Fred L. Doelker, Traffic Manager of W. R. Grace & Company, general agent on the Pacific Coast for the Johnson Line of Stockholm, Sweden, announces increased freight with refrigeration space and passenger facilities with the arrival of the M. S. Axel Johnson.



M. S. AXEL JOHNSON

Latest addition to the Johnson Line combined refrigerator, freight, and passenger carrier, operating between Pacific Coast Ports and Scandinavia, the British Isles, and Continental Europe.

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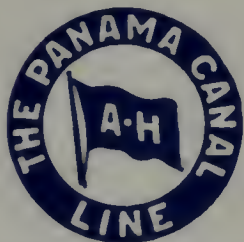


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J. R. Fitzgerald, agent.
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C. L. Gibb, assistant agent.
Tribune Tower, Oakland. Phone Oakland 1022.
FREIGHT ONLY.

SAILINGS—Every 5 days from San Francisco
Oakland, Alameda, and Los Angeles to New
York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma,
Portland, Astoria, San Francisco,
Oakland, Alameda and Los Angeles, to
Charleston, S. C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver,
Seattle, Portland, San Francisco, Los Angeles
and New York, Boston, Providence,
Philadelphia, Baltimore, and Portland, Me.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
311 California street. Phone Garfield 4300.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Boston and New
York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Regularly between San Francisco,
Seattle, Los Angeles, New York, Boston,
Baltimore, Philadelphia, and Norfolk.

GARLAND STEAMSHIP CORP.

260 California St. Phone Garfield 4700.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia,
Baltimore, Norfolk, and San Francisco, Los
Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver,
Seattle, San Francisco, Los Angeles, San
Diego, and New York, Boston, Providence,
Philadelphia, Baltimore, Norfolk, and Portland,
Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San
Diego and Los Angeles; also monthly direct
to Hawaii from Philadelphia, Boston and
New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday
from Portland, every Thursday from San
Francisco, and every Saturday from Los Angeles;
also every seven days from Tacoma,
Vancouver, and Oakland, to Philadelphia,
New York, and Boston.

SAILINGS—Gulf.

Every 16 days from Seattle, Tacoma, Vancouver,
Portland, San Francisco, Oakland and Los Angeles
to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agents.
215 Market street. Phone Garfield 5000.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York,
Boston and Baltimore (westbound) and Los Angeles,
San Francisco, Oakland, Portland, Seattle, and Tacoma;
monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget
Sound, Portland and Columbia River, San Francisco,
and Los Angeles to New Orleans, Mobile, and Gulf of Mexico ports as
inducements offer, via Panama Canal. Call
at Oakland westbound.

PANAMA MAIL STEAMSHIP CO.

2 Pine street. Phone Sutter 3800.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from San Francisco
and Los Angeles via Manzanillo, San Jose de
Guatemala, Acapulco, La Libertad, Corinto,
Balboa, Cristobal, Havana, and New York.
Westward calls: New York, Puerto Colombia,
Cartagena, Cristobal, Balboa, Corinto, La Libertad,
San Jose de Guatemala, Manzanillo, Los Angeles,
and San Francisco.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Offices: 460 Market St.
Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship
Co., 60 California street. Phone Sutter 7800.

PASSENGERS AND FREIGHT.

SAILINGS—Regular intervals between New York
and San Diego, Los Angeles, San Francisco,
Oakland, Portland, Seattle, and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.
310 Sansome street. Phone Garfield 6760.
285 Bacon Bldg., Oakland. Phone Lakeside 3580.

FREIGHT ONLY.

SAILINGS—Weekly between Port Newark and
Los Angeles, San Francisco, and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden and Christenson, Pacific Coast agents.
230 California street. Phone Garfield 2846.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore,
Savannah, and Los Angeles, San Francisco,
Oakland, Portland, and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
F. C. Bennett, Pacific Coast manager.
110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Twice monthly between Seattle,
Tacoma, San Francisco, Oakland, Los Angeles,
San Diego, and New York, Philadelphia,
Norfolk, and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.
Mutual Life Bldg. Phone Eliot 8120.

FREIGHT ONLY.

SAILINGS—Every 10 days from Seattle, Tacoma,
Portland, Astoria to New York, Philadelphia,
and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma,
Portland, Astoria, San Francisco, Oakland,
Alameda, and Los Angeles to Charleston,
S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
Alaska Building. Phone Eliot 2450.

FREIGHT ONLY.

SAILINGS—Every 10 days between Seattle, Portland,
San Francisco, and Los Angeles and New York,
Boston, Providence, Philadelphia,
Baltimore, Norfolk, and Portland, Me.

McCAULEY ON SEAMANSHIP

CAPTAIN EDWARD McCAULEY, Jr., of the firm of Hibbs, McCauley & Smith, naval architects and marine engineers, 311 California Street, San Francisco, is slated to give a series of ten lectures on Practical Seamanship for the University of California Extension, in San Francisco. The date of the first lecture has not been decided upon, but will be announced soon by the Extension Division.

AMERICAN-HAWAIIAN ADDS TONNAGE

The following is an extract from a letter sent out recently by the American - Hawaiian Steamship Company to their shippers. Of course, this strong freight movement is mostly eastbound, but we cannot help but feel the strain of optimism contained in the letter, and know that before many years the growth of industry and population on the Pacific slope will provide full cargoes both ways:

"Although we recently provided more than 50 per cent additional space for our patrons at San Francisco by increasing our service from a sailing every seven days to a sailing every five days, and in addition dispatched the steamer Hawaiian on August 22 with a full cargo loaded at this harbor, and will dispatch the steamer Arizona on October 30 with a full cargo from the Bay District, we have been unable to accept all offerings. We believe that our increased frequency of service, together with our well-known policy of confining our regular North Atlantic service to the transportation of general cargo, is in large measure responsible for our present volume of tonnage, and we are going to make every effort to take care of our patrons."



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	SAN JOSE De GUAT	BALBOA	(Eastbound)
	PUERTO COLOMBIA and CARTAGENA	(Westbound)	

FROM SAN FRANCISCO	FROM NEW YORK
S S VENEZUELA Sails NOV. 7	S. S. COLOMBIA Sails NOV. 19
S S ECUADOR Sails NOV. 28	S. S. VENEZUELA Sails DEC. 10
EVERY 23 DAYS THEREAFTER	

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La Libertad La Union, Amapala, Corinto, San Juan del Sur, Puntarenas, Balboa, Cristobal

S S CORINTO Sails	NOV. 14	CITY OF SAN FRANCISCO	DEC. 19
M S CITY OF PANAMA Sails	DEC. 4	CORINTO	JAN. 9

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Admiral Oriental Line, agent.
420 L. C. Smith Building. Phone ELiot 0974.

FREIGHT ONLY.

SAILINGS—Regular sailings between Seattle, San Francisco, Los Angeles, and Philadelphia, New York, Boston, Baltimore, and Norfolk.

GARLAND STEAMSHIP CORP.

General Steamship Corporation, agents.
Colman Building. Phone ELiot 5706.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone ELiot 2450.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego, and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone ELiot 1206.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma, and Oakland, to Philadelphia, New York and Boston.

Sailings—Gulf.

Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

Pier B. Phone ELiot 5367.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Lobby 4, Central Bldg. Phone ELiot 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland, and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile, and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland westbound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Office, 619 Second Ave.
Freight and Operating Office: Pacific Steamship Company.

L. C. Smith Building. Phone ELiot 2068.

SAILINGS—Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma.

TRANSMARINE LINES

W. C. Benson, Agent.
4421 White Building. Phone ELiot 6127.

FREIGHT ONLY.

SAILINGS—Weekly between Port Newark and Los Angeles, San Francisco, and Oakland.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, agents.

Aretic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah, and Los Angeles, San Francisco, Oakland, Portland, and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane Street terminal. Phone ELiot 6657.

FREIGHT ONLY.

SAILINGS—Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk, and Baltimore.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.
Transportation Bldg. Phone 821-336.

FREIGHT ONLY.

SAILINGS—Every 5 days from San Francisco, Oakland, Alameda, and Los Angeles to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Every two weeks from Vancouver, Seattle, Portland, San Francisco, and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone TRinity 4891.

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly sailings from Boston and New York to Los Angeles and San Francisco.

FREIGHT ONLY.

SAILINGS—Between Los Angeles, San Francisco, Seattle, New York, Boston, Baltimore, Philadelphia, and Norfolk.

GARLAND STEAMSHIP CORP.

Central Building. Phone VAndike 0792.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
638 Van Nuys Bldg. TRinity 3044.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego, and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street.. Phone MAin 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma and Oakland, to Philadelphia, New York, and Boston.

SAILINGS—Gulf.

Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland, and Los Angeles, to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone MEtropolitan 6140.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York, Boston, and Baltimore (westbound), and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone VAndike 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to New Orleans, Mobile, and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland westbound.

PANAMA MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street.

Freight Offices: 108 West Sixth street.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from San Francisco and Los Angeles, via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New

UNITED-AMERICAN APPOINTMENTS

Christian J. Beck, vice-president of the United American Lines, announced recently that W. P. Rudrow has been appointed to succeed M. T. Noblett as freight traffic manager of their intercoastal division, and that, simultaneously, H. C. Van Doorn has been appointed general freight agent to succeed Mr. Rudrow. Other changes in the personnel of the United American Lines intercoastal division involve the transfer of P. J. Fitzgerald, division freight agent, from Syracuse, New York, to Cleveland, Ohio, and the appointment of J. M. Tuttle, formerly of the New York soliciting staff, as division freight agent with headquarters in Chicago.

GEO. H. BAUER CHICAGO HEAD

George H. Bauer, assistant manager of sales of the Foster Engineering Company, of Newark, New Jersey, who has been connected with the company for several years, has been appointed manager of their Chicago branch office. This appointment was effective October 1st. We believe Mr. Bauer's advancement will be welcome news to his personal and business friends.

L. A. FOREIGN TRADE CLUB

The Los Angeles Foreign Commerce Club was organized August 29. Raymond A. Thieme, who has had much to do with foreign trade, set forth the aims and purposes of the club, and he believes that an active force for the development of a valuable trade has been released in the organization of the Los Angeles Foreign Commerce Club. One of the principal objectives of the club will be to affiliate with prominent civic, commercial, traffic and foreign trade groups on the Pacific Coast to further foreign trade.

Associated with Mr. Thieme in the organization are Allen Ray, president, L. L. Dice, vice-president, A. L. Moss, secretary-treasurer, and J. G. Ebert. Meetings are held weekly at the headquarters of the Los Angeles District of the American Commerce Association, in the Stack Building, 228 West Fourth Street.

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FINLAND	Nov. 19
MANCHURIA	Dec. 9
MONGOLIA	Dec. 24

EASTBOUND

From San Francisco, Pier 22—Los Angeles Har.

MANCHURIA	Nov. 14	Nov. 16
MONGOLIA	Nov. 28	Nov. 30
FINLAND	Dec. 12	Dec. 14
MANCHURIA	Jan. 2	Jan. 4

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Atlantic Transport Line to LONDON White Star Line to LIVERPOOL, SOUTHAMPTON and MANCHESTER

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LOS ANGELES, 510 South Spring St.

PACIFIC STEAMSHIP CO. (The Admiral Line), General Freight Agents Pacific Coast

SAN FRANCISCO, 60 California St. LOS ANGELES, 322 Citizens Nat'l Bank SEATTLE, L. C. Smith Bldg. PORTLAND, Admiral Terminal

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York. Westward calls: New York, Puerto Colombia, Cartagena, Cristobal, Balboa, Corinto, La Libertad, San Jose de Guatemala, Manzanillo, Los Angeles, and San Francisco.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company.
322 Citizens' National Bank.
Passenger Offices: 510 So. Spring street. Phone TRinity 6408.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

TRANSMARINE LINES

G. T. Darragh, agent.
Central Building. Phone BRoadway 2580-2581.

FREIGHT ONLY.

SAILINGS—Weekly between Port Newark and Los Angeles, San Francisco and Oakland.

UNITED AMERICAN LINES, INC.

Los Angeles Steamship Company, agents.
407 Central Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland, and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk, and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

G. D. Kennedy, agent.
Railway Exchange Bldg. Phone Broadway 2744.
SAILINGS—Every 10 days from Portland, Astoria, Seattle, and Tacoma to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone ATwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles, New York, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone ATwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.
Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic—Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma and Oakland, to Philadelphia, New York, and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York, Boston, and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
408 Board of Trade Bldg. Phone Bdwy. 2503.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco, and Los Angeles to New Orleans, Mobile, and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland westbound.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.

PASSENGER AND FREIGHT.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland, and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Every two weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles, and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Montreal. Through bills of lading from other Pacific Coast ports.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.—Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.—Monthly from Baltimore to Hawaii via San Diego and New Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Empire Shipping Company, Ltd.
Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic—Intercoastal. Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma, and Oakland, to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland, and Los Angeles to Galveston, Houston, New Orleans and Mobile.

PACIFIC-CARIBBEAN GULF LINE

Dingwall Cotts & Co., agents.
413 Pacific Building.

FREIGHT ONLY.

SAILINGS—Monthly from North Pacific ports. San Francisco, Los Angeles to New Orleans, Mobile, and Gulf of Mexico ports, via Panama Canal. Call at Oakland westbound.

DIAMOND POWER SPECIALTY CORP.

Diamond Power Specialty Corporation of Detroit announce that the territory of the Lathrop-Trotter Co., 733 Union Trust Building, Cincinnati, Ohio, who have been sales representatives for the Diamond Power Specialty Corp. in the Cincinnati territory for many years, has been extended to take in Indianapolis and the adjacent territory in Central and Southern Indiana.

AMERICAN MARINE CHANGES LOCATION

The American Marine Insurance Syndicates and the United States Salvage Association, Inc. are now located in new offices at 56 Beaver Street, New York City. The syndicates moved to these offices on October 1.

ELECTRIC FLOW METER FIRM

The Robert June engineering management organization of Detroit has acquired control of the Electric Flow Meter Co. at Kansas City, Mo., formerly the Hyperbo-Electric Flow Meter Co., of Chicago, and will henceforth operate the business under its own management, with executive offices at 8835 Linwood Ave., Detroit, Michigan. Robert June becomes president of the company; J. M. Naiman, formerly general manager, becomes vice-president, consulting, and chief engineer; while Major W. W. Burden, of the Robert June organization, becomes treasurer.

Major Burden took his engineering degree at University of Missouri. He has served as engineer for the City of St. Louis, with the Twelfth Engineers in foreign service, and as general superintendent of construction of Tiawah Tunnel, and consulting engineer on the Spavinaw Dam.

SHIPPING OFFICE AT OAKLAND

Sudden & Christenson, one of the largest coastal shipping concerns, has opened an Oakland branch on the fifteenth floor of the Tribune Tower. The offices are in charge of James B. McInaney, for many years connected with the company and long associated with transportation on the Pacific Coast. The vessels of the United American Lines now dock at the Lawrence Terminal.

NORTON, LILLY & COMPANY

General Agents, Pacific Coast

ISTHMIAN STEAMSHIP LINES

(Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore

ARGONAUT STEAMSHIP LINE

(Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Philadelphia and Baltimore.

SOCIETE GENERALE DE TRANSPORTS MARITIMES A VAPEUR

(Pacific-Mediterranean Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles and San Diego to Genoa and Marseilles and Other Mediterranean Ports as Inducements Offer.

PAN-PACIFIC LINE

(Pacific Coast Ports-West Coast South America Service)

Regular Fast Freight Service from Pacific Coast Ports to Paita, Callao, Mollendo, Arica, Iquique, Antofagasta and Valparaiso (other ports as inducements offer.)

ELLERMAN & BUCKNALL S. S. CO., Ltd.

(Pacific-United Kingdom-Continent Service)

Sailings from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego to Havre, London, Hull and other United Kingdom and Continental Ports as Inducements Offer. Through Bills of Lading Issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant Ports with Transhipment at Hull.

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WHEN CLEAR—BURN BLUE LIGHT OR JACK AT FOREMAST

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SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels).
112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar, Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
311 California street. Phone Garfield 4300.
PASSENGERS AND FREIGHT.

SAILINGS—Weekly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila. Fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

SAILINGS—Guam Service.—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila), and Java.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels).
Sudden & Christenson, agents.
230 California street. Phone Garfield 2846.
FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning direct to Portland.

OSAKA SHOSEN KAISHA

Williams, Diamond & Co., agents.
310 Sansome St. Phone Sutter 7400.
FREIGHT ONLY.

SAILINGS—San Francisco Service.
Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

PASSENGERS AND FREIGHT.

SAILINGS—Los Angeles Service.—A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
551 Market street. Phone Sutter 3900.
PASSENGERS AND FREIGHT.

SAILINGS—Every two weeks between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

FREIGHT ONLY.

SAILINGS—Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.
403 Alaska Commercial Bldg. Phone Gar. 3899.
FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland, and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.
City ticket office: 1300 Fourth Ave.
General Offices: 1519 Railroad Ave. So.

PASSENGERS AND FREIGHT.

SAILINGS—Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong, and Manila.

FREIGHT ONLY.

SAILINGS—Regular service to Vladivostok, Dairen, Tientsin, Taku Bar, Tsingtao, Shanghai, and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Stuart Building. Phone ELiot 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.
Central Building. Phone ELiot 7697.
FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
American Bank Building. Phone ELiot 1450.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone ELiot 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong, or other Oriental ports as inducements offer.

OCEAN TRANSPORT CO., LTD.

General Steamship Corporation, agents.
Colman Building. Phone ELiot 5706.
FREIGHT ONLY.

SAILINGS—Fortnightly from Portland, Puget Sound, and Vancouver to Japan and North China ports.

OSAKA SHOSEN KAISHA

Pier 6.
PASSENGERS AND FREIGHT.
SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone MAIN 3163.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone ELiot 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle, and Yokohama, Kobe, Osaka, and Nagoya.

YAMASHITA KISEN KOGYO KAISHA

Yamashita Company, Inc., agents.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka, and Nagoya.

NEW INCORPORATIONS

The American Dock Company, Portland, Oregon, was recently incorporated with a capital stock of \$10,000 to engage in a general warehouse and wharfage business.

The Maring Salvage Corporation, Portland, Oregon, has been incorporated with an authorized capital of \$1,000,000. W. D. Sisson, M. C. Boothe, and J. C. Prescott are the incorporators.

Johnson Towboat Co. has been incorporated to engage in towing business at Everett, Washington, by Marion Johnson, Joseph Irving, J. L. Dougherty. Capital stock is \$10,000.

LATIN-AMERICAN LINES MEET

Freight agents of all steamship lines operating between San Francisco and Latin-American ports met with representatives of the San Francisco Chamber of Commerce on October 8 to discuss ways and means of increasing trade with the southern countries. Robert Cabrera, chairman of the Chamber's Latin-American Committee, presided.

Mr. Cabrera pointed out that San Francisco today is receiving a fair share of trade from the Southern Republics, but that with the growing needs of these countries an unlimited field for trade extension presents itself to the business interests of this city, and that it was felt that through a closer co-operation between the commercial organizations throughout these Latin-American countries and the Chamber of Commerce and shipping interests much could be done to greatly increase trade between this port and Mexico and Central and South America.

Plans were formulated for a comprehensive survey of the port charges and regulations of the various southern countries, looking toward the elimination of obstacles that may interfere with trade development.

ROY CROWDER ON TOUR

Passenger Traffic Manager Roy V. Crowder of the Los Angeles Steamship Company is making a tour of the company's agencies through the East and Middle West, doing missionary work in the interest of travel to the Pacific Coast and Hawaiian Islands.



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 C. GARDNER JOHNSON, Agt.

ORIENTAL

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.
(Operating U. S. S. B. vessels).
701-702 Transportation Bldg. Phone TUcker 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yokohama, Kobe, Shanghai, Hongkong, Manila, and Singapore. Also calls at Dairen, Taku Bar, and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
412 Union Oil Bldg. Phone BRoadway 7900 and VAndyke 4944.

FREIGHT ONLY.

SAILINGS—Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guarantee Bldg. Phone 674-891.
PASSENGERS AND FREIGHT.

SAILINGS—Weekly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila. Fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Regular sailings between Los Angeles, San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSEN KAISHA

McCormick & McPherson, agents.
Transportation Bldg. Phone VAndyke 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Darban, and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—Monthly from Los Angeles direct to Yokohama, Kobe, Shanghai, Manila, Singapore, Sourabaya, Samarang, Batavia.

TOYO KISEN KAISHA

(Oriental Steamship Company).
S. L. Kreider, agent.

175 Pacific Electric Bldg. Phone TRinity 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

PORTLAND

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
702 Porter Bldg. Phone MAin 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OCEAN TRANSPORT CO., LTD.

General Steamship Corporation, agents.
Porter Building. Phone BRoadway 6714.

FREIGHT ONLY.

SAILINGS—Fortnightly from Portland, Puget Sound, and Vancouver to Japan and North China ports.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels).
Columbia Pacific Shipping Company.
Porter Building. Phone BRoadway 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

Every 2 weeks from Portland to Yokohama, Kobe, Hongkong, and Manila, returning direct to Portland.

PORTLAND-ORIENTAL LINE

Wallem & Company, agents.
Porter Building. Phone BRoadway 1844.
SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TATSUUMA KISEN KAISHA

Walker Ross, Inc., General Agents.
Yeaton-Coates Co., Agents.
Board of Trade Bldg. Phone Broadway 7574.
FREIGHT ONLY.
SAILINGS—Monthly between Portland and Kobe, Osaka, Yokohama, Nagoya, as inducements offer.

TOYO KISEN KAISHA

(Oriental Steamship Company).
Oregon-Pacific Company, agents.
812 Spalding Bldg. Phone Broadway 4529.
FREIGHT ONLY.
SAILINGS—Monthly from Portland to Oriental Ports.

YAMASHITA KISEN KOGYO

KAISHA
Yamashita Company, 1109 Porter Building.
FREIGHT ONLY.
SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe, and irregular service from China and Japan ports to San Francisco, Portland, and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Yorkshire Building. Phone Seymour 9576.
PASSENGERS AND FREIGHT.
SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.
FREIGHT ONLY.
SAILINGS—Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone Seymour 2630.
PASSENGERS AND FREIGHT.
SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son., Ltd.
602 Hastings St., W. Phone Seymour 2376.
PASSENGERS AND FREIGHT.
SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSEN KAISHA

Empire Shipping Company, Ltd.
815 Hastings St., W. Phone Seymour 8014.
PASSENGERS AND FREIGHT.
SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson, Walton & Company.
837 Hastings street, W. Phone Seymour 7147.
FREIGHT ONLY.
SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.
Phone Seymour 2198.
FREIGHT ONLY.
SAILINGS—Regular service to Yokohama, Kobe, Osaka, and Nagoya.

YAMASHITA KISEN KOGYO

KAISHA
Yamashita Co., Inc.
Merchants Exchange Building.
FREIGHT ONLY.
SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka, and Nagoya.

OCEANIC LINE COMMODORE'S FLAG

Captain J. H. Trask, veteran commander of the Oceanic Steamship Company's liner Sierra, was presented with a commodore's flag by Hugh Gallagher, operating manager of the company, at a recent luncheon on board the Sierra. Captain Trask has been with the company 26 years, having come to the Pacific Coast as chief operator of the Sierra from the yards of her builders on the Atlantic Coast, and, as he puts it, was practically launched with her.

LOS ANGELES TO ORIENT

That the Los Angeles Steamship Company plans to enter the Oriental field has been rumored so consistently as to make it almost conclusive. The Los Angeles & Salt Lake Railroad, a subsidiary of the Union Pacific system, which is building a large terminal on the Los Angeles waterfront, is reported to be dealing with a large steamship company for an extension of its service. F. H. Knickerbocker is general manager of the Los Angeles & Salt Lake Railroad.

BONDED WAREHOUSE FOR OAKLAND

The first bonded warehouse to be opened in Oakland was sanctioned by the government and put into commission at the Howard terminal the first of October. The increase of exports and imports into Oakland direct has made the establishment of a bonded warehouse a great advantage to shippers at this port. The opening of this warehouse is directly in line with the policy of the Howard Terminal Company to give the shipping and business public a fully developed service.

ADMIRAL LINE PROMOTIONS

When the Pacific Steamship Company sent E. Grant McMicken, passenger traffic manager, to New York on the H. F. Alexander as manager of their New York-Miami service, several promotions were made in the Pacific Coast territory. H. B. Brittan has been appointed general passenger agent with headquarters in San Francisco; R. V. Schutten was made assistant general passenger agent at Los Angeles; and I. J. James was made assistant to the passenger traffic manager in Seattle.



hawaii

Where Don Juan Gaetano planted the Standard of Spain

IN the days when the Dons of Spain sailed the Seven Seas it is said that Don Juan Gaetano discovered Hawaii. After months of voyaging he came to these isles of untold beauty, abounding with fruits of indescribable delicacy, and inhabited by a gentle, cultured people—hospitable and peace-loving.

Only five and one-half days on a perfectly equipped Matson liner and the Islands that struck the Spanish Dons with wonder are yours! Here is a holiday of incomparable pleasure. The unique, almost indescribable charm of Hawaii, the combined atmosphere of the Orient and the Tropics.

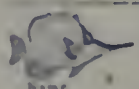
You land at Honolulu—the gateway to these mystical latitudes of delight. From then until you sail away with "Aloha Oe," the most plaintive and tenderest melody in the world, floating up to voyagers literally covered with flowers, you have only to enjoy to the utmost the exquisite hospitality of the gayest, loveliest, most fascinating of the Pacific island groups. The minimum cost for the tour is about \$270.

This land of enchantment is within your reach. Every week one of these luxurious Matson liners sails from San Francisco [from Seattle every forty-two days] for Hawaii.

The new Matson ship, the MALIBU (Flying Fish), now under construction, will become ready early in 1927. She will contain more private baths than any other ship afloat. The vessel will cost over six and a half million dollars and will be designed as a naval auxiliary cruiser.

matson

Navigation Company



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AUSTRALIA

THE Oceanic Steamship Co. is operating a passenger and express freight service from San Francisco direct to lovely Suva, chief port of the Fiji Islands, with sailings Oct. 20 and Nov. 10 and every 21 days thereafter.

This service makes directly available to the American tourist a different vacation land—alluring, picturesque, and restful, but with modern hotels, golf courses, and fine motor roads. To the commercial world, the new 15 day service to Suva is a distinct time-saver.

The Oceanic Steamship Company offers

The shortest route from America to the South Seas and Australia

Its comfortable liners S. S. Sierra, S. S. Sonoma, S. S. Ventura (rated Lloyds 100A1) sail from San Francisco, touching at Honolulu, Samoa, Suva and thence direct to Sydney. The time of the complete voyage from San Francisco to Sydney, Australia, remains the same—19 days.

For passenger and freight tariffs apply to

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TELEPHONE DOUGLAS 3600



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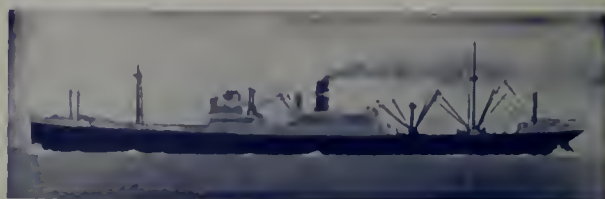
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BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.
Dodwell & Co., Ltd., agents.

2 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool, and Glasgow.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp, Rotterdam.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

433 California street. Phone Sutter 6717.

PASSENGERS AND FREIGHT.

SAILINGS—Regular service, Pacific Coast ports, direct to Hamburg, Hull, Copenhagen, with trans-shipment to all Scandinavian and Baltic ports.

ELLERMAN & BUCKNALL STEAMSHIP CO., LTD.

Norton, Lilly & Company, general agents.

230 California street. Phone Sutter 3600.

FREIGHT ONLY.

SAILINGS—Monthly between Vancouver, Puget Sound, Portland, San Francisco, Los Angeles, San Diego and Havre, London, Hull and other United Kingdom and Continental ports as inducements offer. Through bills of lading issued to Scandinavian, Baltic, Portuguese, Spanish, Mediterranean and Levant ports, via Hull.

FRENCH LINE

(Compagnie Generale Transatlantique).

General Steamship Corporation, sub-agents.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull, and other ports when inducements offer.

Fortnightly from Vancouver and Los Angeles to United Kingdom.

FURNESS LINE

Furness, Withy & Company, Ltd.

Furness (Pacific), Ltd.

710 Balfour Building. Phone Sutter 6478-6479

PASSENGERS AND FREIGHT.

SAILINGS—Fortnightly from Vancouver, Seattle, Portland, San Francisco and Los Angeles to Manchester, Glasgow, Liverpool, London, Havre, Hull and other ports when inducements offer.

Fortnightly from Vancouver and Los Angeles to United Kingdom and Continent.

GENERAL STEAMSHIP CORP.

240 Battery street. Phone Kearny 4100.

FREIGHT ONLY.

SAILINGS—Regular service from Pacific Coast ports to London, Hull, and Leith; also Scandinavian and Irish ports as inducements offer.

HARRISON DIRECT LINE

Balfour Guthrie & Company.

351 California street. Phone Sutter 6427.

FREIGHT ONLY.

SAILINGS—Every 30 days from Vancouver, Victoria, Seattle, San Francisco, Oakland, and Los Angeles to United Kingdom. From August to December, sailings fortnightly.

ISTHMIAN STEAMSHIP LINES

E. C. Evans & Sons, general agents.

260 California street. Phone Douglas 8040.

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Edward D. Kilburn, vice-president and general manager of the Westinghouse Electric International Company, and Walter S. Rugg, general sales manager of the Westinghouse Electric and Manufacturing Company, were named vice-presidents of the latter company at a recent meeting of the board of directors in New York. At the same time Richard B. Mellon of Pittsburgh, president of the Mellon National Bank of that city and a brother of A. W. Mellon, secretary of the United States Treasury, was elected a director of the company. Mr. Mellon will fill the vacancy caused by the death of William McConway, formerly president of the McConway & Torley Co.

Messrs. Rugg and Kilburn will take charge, respectively, of the engineering and sales activities. Vice-president H. D. Shute, aside from the direct operation of the sales department, which will be handled by Mr. Kilburn, will retain his direction of the broad commercial activities of the company, including especially customer relationships.

Vice-president H. P. Davis, formerly in charge of engineering and manufacturing activities as applying to the strictly electrical portions of the company's business, will have direction over the entire manufacturing activities of the company, and, in addition, will have direction on the general features of the radio business, including broadcasting.

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5.51 nautical miles per barrel of fuel

*The best steamer performance with
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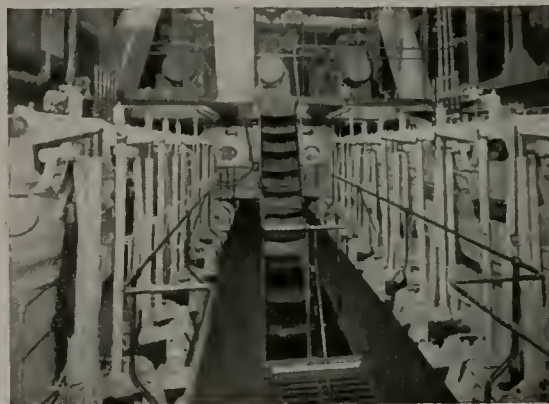
THE Motorship "Solitaire" has been used by the Texas Company since April 1920, to carry oil products from its Port Arthur refinery to various Gulf and Atlantic ports.

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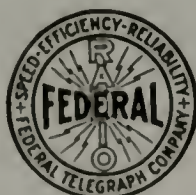
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There She Blows!

(Continued from page 503)

handle the killing lance. The line tender had his line around the snubber keeping a good strain, but not too hard. The whale soon reached the bottom and there rested a moment before starting up. Reaching the surface she blew, and blood was also thrown out with the steam, showing she was badly hurt. As she came up the mate called for the men to pull their best, the paddles having been thrown down and oars shipped. The boat steerer handling the long oar with skill, brought the craft close to the whale, and the mate used the killing lance, a long-bladed spear, thrusting it deep into the side of the whale. She made a few flurries and rolled over on her side, dead.

The other boats were soon alongside, irons, with lines attached, were thrown into the huge hulk, and all the boats started to tow the prize to the steamer. However, we were now coming down toward them at speed, as when the thud of the exploding bomb was felt on board, all quietness ceased. While we were few, we made noise enough, for the firemen shook up the furnace fires with vim, the engines were started, and, with the cook at the wheel we were streaking it for the captured whale.

Cutting In

We soon had the animal alongside, and then the cutting in commenced. The first thing done was to decapitate the monster and hoist the head, which contains the bone, on deck. As this weighed some twelve tons, it was quite a job. The cutting boards were already rigged, and armed with long sharp blubber spades, a strip of skin and fat was started up with the yardarm tackles. This strip was about twenty inches in width and with blubber some ten to fourteen inches thick. The men on the cutting frames sliced away, and the tackles, operated by steam winch, hoisted the greasy mass up to the tops, where another tackle was hooked on, the first one slacked away, and the long strip lowered to the deck. This was repeated until the whale was peeled like an apple.

The decks were full of the slippery stuff, and a gang was cutting it up into blocks about two feet long and loading the big steam retorts forward. When one was full then the chief engineer took charge and commenced to cook the mess under steam pressure. Gage glasses and try cocks on the sides of the retorts told when the blubber had broken down and the oil had separated from the flesh. The oil was then blown over to an open rendering steam kettle, where all the remaining water was cooked out and the clean oil let run to the tanks below. For while the bone was the main thing, the oil was saved as a by-product; not of much value, but it helped out a slack catch.

Many hands made light work, and the mess on deck was soon out of the way; the oil was cooked out, the bone stowed, and the lookout for whales went on. The cook fried doughnuts in the hot whale oil in the rendering tank and they were very good, the fat being much like lard when fresh, though it soon develops an odor strong and mean. We worked nearer to the coast and one day sighted a group of natives coming over the floe ice to trade with us. They had skins of fox, marten, ermine, otter, bear, and other animals, which they sold very cheaply, taking payment in trade such as flour, hard bread, knives, molasses, cloth, and other stuff. These natives were of a very low type. Ethnologists would have probably classified them as of Mon-

golian breed, probably descendants of Japanese fisher-folk who had been driven to these cold coasts by stress of weather. The ice was too heavy for us to make land at this point, and the weather becoming nasty, we made for more open water to the south and east toward St. Lawrence Island.

Arctic Time

It was great sport shifting the clocks on the easterly or westerly courses. The narrow degrees of longitude changed the time very quickly, but not as fast as later in the season when up in the seventies, where a degree of longitude is barely fifteen miles and the time change is four minutes. We arrived off the coast of St. Lawrence Island, cruising for whales, but did not sight any. We did a little trading with the natives and took a run ashore.

It was commencing to get warmer and the ice was rotting fast. We then made over toward the Alaska shore and anchored one afternoon near where Nome now is, though at that time there was nothing there to indicate the great gold rush soon to start. We went ashore and had some shooting of ptarmigans. These birds and the incident of hunting furnished us with considerable amusement, as the first assistant, who had been up that way before, had been telling us of the sport shooting "Tommykins." Just what sort of game this was we did not know, but kept mum, and later found out that he meant ptarmigans. Anyway you call them, they are a fine game bird, much like a grouse, brown in summer but snow white in the winter.

Pure Plumbago

We stayed around there for a few days and then set out for Cape Yorke and Prince of Wales Bay, where the western and eastern continents approach each other very closely. We passed through the Bering Strait, and anchored off the Diomedes Islands, going ashore there for a "gam" with the natives and to have a look around. Some of the men climbed to the peak of one of the islands to view the beauties of the surrounding scenery. The islands are apparently of volcanic formation with no vegetation other than tundra grass and lichens. Nearly up to the summit was a large deposit of plumbago, almost pure. From the outcroppings we chopped out big chunks to take on board to lubricate blocks and pins, and such other uses as "black lead" is put to on ship board. The writer does not know whether this deposit has ever been worked or not, but there is a great quantity of it there. All the old whalers knew of it, but perhaps it is too far away to be commercially useful. The quality seemed very fine.

Leaving this part of the coast, we struck off toward East Cape on the Siberian side, where we were to take on a gang of natives to help out in whaling. While there some of the crew thought it a good thing to desert, and five of them took leave. However, they were captured and brought back. The captain gave them a lecture on their foolish conduct, and in an endeavor to get at the reason of their desertion, was told by the ring-leader that the chief engineer would not let them have lard oil to burn in the forecabin lamp, and that the whale oil smelt so bad they had decided to jump the ship. These were poor excuses, but they thought better than none. However, they did not get the lard oil, as we used that for engine lubrication in those days and that was what it was put on board for. It may be opportune to mention that we had no electric lights on the old Narwahl. Kerosene was used for lamps in the cabin and whale oil for other service.

Will later describe something of the more northerly cruising and the commencement of the cold weather.



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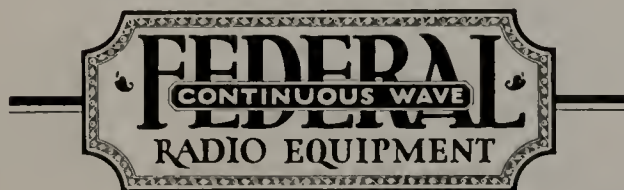


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The National Magazine of Shipping

DECEMBER, 1925

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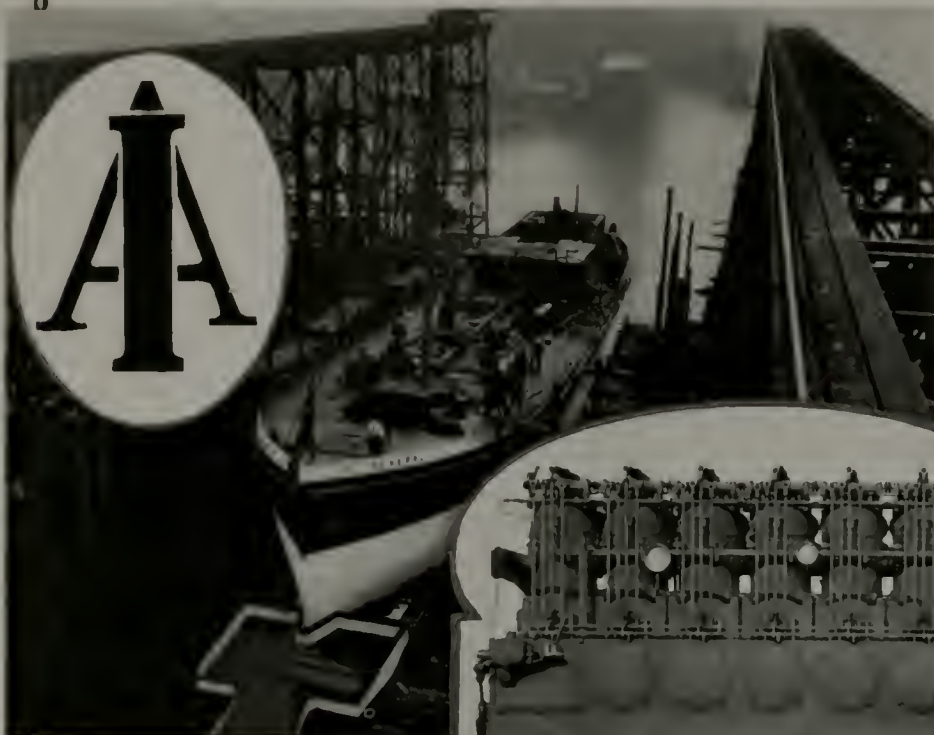
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World Exports at Par

THE National Foreign Trade Council has been making analytical study of world trade figures, and has reached the encouraging and optimistic conclusion that the volume of world trade in exports is now on a par with the figures for 1913.

The fifteen principal exporting nations of the world, including the United States, which carry on more than 80 per cent of the world's export trade, showed a combined total of exports at the end of the fiscal year of 1925 of about \$15,088,000,000. Comparing the present exports of these countries with their exports in 1913, which amounted to \$15,800,000,000, their proportionate recovery is thus within five per cent of their 1913 volume of trade. Excluding the United States, which has made a thirty per cent advance during the period in real trade, their present deficit is about eleven per cent from their standing in 1913.

These figures allow for all deflation and are reduced to 1913 values. In other words the parity now approaching is not one in dollar values, which have already passed 1913 figures, but in bread and meat and clothing values adjusted to cost of living quotations, which approximate a true comparison with pre-war conditions. The recovery of the world in export trade during the past two calendar years has been recorded by the Department of Commerce as averaging between ten and eleven per cent, and this average has been maintained in the present fiscal year. If the world's growth in real trade continues, therefore, it is due to reach very close to 1913 figures at the end of the present year, and by the end of the next fiscal year should show a small surplus.

More than twelve years will thus have elapsed since the outbreak of the war in 1914 before the world can be assured of having made up the loss it has suffered in the real value of international trade.

The figures of the physical volume of trade also bear out the conclusion that the world is again very close to a parity. In its estimate for 1924 the Department of Commerce computed that the physical volume of trade between the countries of the world was ninety-six per cent in 1924 of what it was in 1913. It is steadily gaining by from six to eight per cent a year, and the volume of world trade will thus have reached or passed its 1913 figures by the end of the present year.

The United States is accountable for most of this gain, as its increase in the value of its world trade has been more than thirty per cent since 1913. Other countries which have exceeded the proportionate gain of the United States during the period have been Canada with a gain of over 90 per cent, Japan with sixty-four per cent, and Australia with thirty-five

per cent. The amount of gain recorded by the United States, over \$800,000,000, is far in excess of that of any other nation when reduced to 1913 values. The gain of Japan has been about \$203,000,000; that of Canada \$335,000,000; and that of Australia \$120,000,000. The most interesting gain of all has been that of France, which stands third among the nations, or next following the United States and Canada in the amount of real trade gained since the war. France increased its exports from \$1,328,000,000 in 1913 to \$1,650,000,000 at the end of the present fiscal year—a gain of \$322,000,000, or about twenty-five per cent. This is a showing that can be made by no other European nation.

On the other side of the balance sheet the world shows a net loss in real export trade for Germany of forty-seven per cent; for Belgium of thirty-four per cent; and for Great Britain of five and one-half per cent. Russia, of course, shows the greatest loss of all with eighty-four per cent reduction in real export trade value from \$783,000,000 to \$120,000,000. Allowing for the independent status of Russian Poland and the Baltic States, the Russian deficit, as weighted to allow for these factors, is still between fifty and sixty per cent, or still the heaviest loss in real trade suffered anywhere in the world.

In spite of the fact that China's recent losses in trade have diverted attention from that country, it is interesting to note that China's latest export figures still show an actual gain over 1913 of thirty-seven per cent, with an aggregate surplus for 1924 of over \$100,000,000 greater than 1913. The preliminary estimates for the present year, however, show that disturbed conditions in China are materially reducing that surplus.

Don't Give Up the Ship

PACIFIC MARINE REVIEW has always preached the necessity of shipmindedness among citizens of the United States. It is very significant in this connection that nationally read publications take up the slogan. We therefore commend to the attention of ship owners, ship builders, and all the marine fraternity the following editorial under the above caption, which appeared in the Saturday Evening Post under date of November 14, 1925:

We read much in the newspapers about the political aspects of our shipping mess, but nothing at all about its reactions on the rank and file of the men in the service.

Shipping is more than ships. It is trained, experienced, and loyal men. Yet how can we keep such men under present conditions? How can we develop an efficient personnel on land and sea? How can we

build up a permanent merchant marine under government boards and policies that are constantly shifting? The answer is that we cannot.

The first essential of any business is not a board, but a boss, and then there must be some assurance of stability, permanence and promotion for the men under him. No man of brains and common sense is going to stay long with any organization which is not built on a well-considered plan; that is not looking forward to a steady growth; that cannot offer its employees a reasonably assured future.

There seems to be no escape under present conditions from government operation. But even so, we can perhaps find a way to minimize government stupidity. It would be folly for us to lapse back into our prewar condition on the high seas.

Today there are no better ships, no better found ships for comfort, food, and service than Leviathan and George Washington. But they were not new when they were reconditioned, and before they can be replaced they will be fairly old, as North Atlantic passenger ships go. We should be laying down the keels of two—or better, three—new ships for this service, not such big ships as Leviathan, perhaps, but large and speedy. We should maintain and expand our other foreign services, especially that to South America. They are vital to our growing trade and prosperity. When Barry Cornwall wrote:

"The sea! the sea! the open sea!
The blue, the fresh, the ever free,
Without a mark, without a bound,
It runneth the earth's wide regions round"—

he might have added, and not have been far from the truth, "and without an American flag on it!"

We made a blundering start to remedy that condition, but we are drifting back. Only a courageous policy in the hands of an able business executive will put us on our course.

Secretary Hoover has been handed all the odds and ends, the cats and dogs of Government. From them he has built up a strong and admirable department. We incline to the opinion that he might salvage the remnants of our fleet, and not only keep our flag flying on the high seas, but put our merchant marine on the right basis.

"Don't give up the ship."

Our Merchant Fleet

INCREASE in the number of privately owned vessels engaged in overseas foreign trade from 117 to 134 during the period from July 1, 1925 to October 1, 1925 is indicated by the current issue of the quarterly survey of the status of the American merchant fleet, prepared by the Bureau of Research, United States Shipping Board, and it is further noted that during the same period the number employed in coastwise traffic increased from 671 to 683.

In consequence of depression in the Mexican trade, 11 general cargo carriers and 23 tankers have been withdrawn from that route.

During the quarter ended September 30 the sea-going fleet of privately owner American vessels has been augmented by the transfer of 25 Shipping Board vessels to private ownership, the entry into service of one newly completed passenger and cargo carrier designed for coastwise traffic, and the purchase of one tanker from a foreign owner, a total increase of 27

ships. During the same period two vessels were transferred to Great Lakes service, one was sold to a foreign purchaser, five were scrapped, and three were lost through disasters, a total decrease of 11 ships. The net increase of 16 brings the total number of privately owned steam and motor vessels of 1000 gross tons and over to 1109, with a total gross tonnage of 5,281,626 tons, of which 91 per cent was in active service October 1, 1925.

The Government owned fleet as of October 1, 1925 included 1186 steam and motor vessels of 5,770,071 gross tons, about 30 per cent of which was in active service on that date.

Pacific Maritime Market

THE Board of State Harbor Commissioners, operating the Port of San Francisco, is authority for the statement that the steamship companies operating in and out of that port annually in their operation spend \$85,000,000 at San Francisco. Taking this figure as a basis, we feel justified in asserting that on the Pacific Coast of the United States there is a marine market among the coastwise, intercoastal, and offshore shipping of at least \$100,000,000.

This huge sum is disbursed for payroll, for supplies, for equipment, for repairs, for improvements, for insurance, and for overhead office expenses.

The \$85,000,000 as applied to the Port of San Francisco alone would include port charges.

The \$100,000,000 as applied to the entire Pacific Coast excludes that item.

This \$100,000,000 a year, however, does not comprise by any means the entire market. In addition to this there are to be considered the market in workboats and pleasure craft and the market in marine terminal equipment and construction.

For workboats and pleasure craft, the annual Pacific Coast bill covering maintenance, wages, repairs, equipment fittings, and insurance has been variously estimated at from \$17,000,000 to \$50,000,000. Let's be conservative and call it \$25,000,000.

The program of port improvements along this coast calls for the expenditure of at least \$74,000,000 in construction and equipment during the next three years.

This makes a total of approximately \$150,000,000 per year; and that yearly budget, like all other American budgets, has the growing habit.

We have not mentioned the Hawaiian or the Philippine Isles, nor Australasia, the Orient, or Alaska, nor have we mortgaged future growth in any of these statements. Take a few outstanding Pacific Coast features in a maritime way.

The Pacific Coast maritime market demands the highest standard of quality and is able to pay for that standard.

No marine market elsewhere is having such consistent growth in volume.

No coast has richer resources in undeveloped potential cargoes.

No coast faces larger potential markets for the products of its soil and of its industries.

Wise sales managers will study the Pacific Coast market and steadily cultivate all of its possibilities. Profits present and future are there in abundance for the man of vision and understanding.

The Panama Canal and the Pacific Coast

A Shrewd Analysis Prepared by a Great Financial Institution Showing the Effect of the Canal on the Trade and Development of the Pacific Coast

IN 1920, out of a total traffic of 11,236,000 tons of cargo through the Panama Canal, 5,269,000 tons was westbound from the Atlantic to the Pacific. Of that amount, only 517,000 tons, or 9.8 per cent, was coastwise traffic to the Pacific Coast. Some 5,967,000 tons was eastbound. Of that amount, 669,000 tons, or 11.21 per cent, was coastwise traffic from the Pacific Coast to Atlantic and Gulf ports. About 10.5 per cent of all the traffic was intercoastal.

In 1924, out of the total traffic of 26,905,000 tons, 7,860,000 tons was westbound, an increase of 49 per cent over the aggregate of 5,269,000 tons in 1920. Of this 7,860,000 tons, 2,719,000 tons, or 34.6 per cent, was in coastwise cargoes to the Pacific Coast states, as against only 9.8 per cent of the smaller total in 1920. The eastbound cargoes through the canal in that year aggregated 19,135,000 tons, an increase of 13,168,000 tons, or nearly 221 per cent over the total eastbound traffic in 1920. Of this amount, 10,808,000 tons, or 67.9 per cent, was composed of intercoastal cargoes from the Pacific Coast states. That is to say, the eastbound cargoes from the Pacific states that passed through the canal during the fiscal year ended June, 1924, aggregated nearly as much as the total traffic of the canal east and westbound in 1920. As a matter of fact, the eastbound cargoes from the Pacific states sent through the canal to all points in 1924 aggregated 12,984,000 tons, an increase of 1,748,000 tons, or about 15.5 per cent, over the total traffic of the canal, 11,236,000 tons, from all points and to all destinations, in 1920.

No doubt a large proportion of these cargoes eastbound in the year 1923-1924 was oil from California—more than 9,755,000 tons, or 75 per cent of the total. But other cargoes of much greater value, bulk for bulk, were comprised in the other 25 per cent. For instance there were 445,000 tons of canned goods and 103,000 tons of dried fruits. The seaborne exports of these commodities from San Francisco alone, in 1924, aggregated a value of nearly \$38,000,000. More than 1,600,000 tons of wheat and barley went east through the canal during the same period, and more than 1,800,000 tons of Pacific Coast lumber. The barley exports from San Francisco alone were valued at nearly \$11,000,000.

The Pacific Coast sends practically no manufactured goods to the east by sea, other than canned goods, dried fruit and cold storage goods. But the impetus

given to production by virtue of the new and economical outlet for produce afforded by the Panama Canal is reflected in the great increase of manufacturing industries that has been noticeable in the Pacific coast region since the expansion of canal traffic has assumed such notable proportions.

Of course other influences contribute to this condition of progress notably the development of local transportation facilities by means of the automobile and the extension of good roads, and the industries that invariably are born of and develop in such environments.

Industrial Developments

In California, in 1923, for example, there were 9228 manufacturing establishments, each with an output in excess of \$5000 a year. These employed an average of nearly 247,000 wage-earners, paid out wages amounting to more than \$353,000,000, and produced commodities valued at more than \$2,216,000,000 at factory prices. This was an increase of 24.5 per cent in the number of wage-earners, and of 26 per cent in the value of the products as compared with 1922.

In Washington, there were 3032 such establishments in 1923, with an average of 111,660 wage-earners, who received more than \$156,400,000 for their services, and produced goods worth more than \$660,000,000. The increase in the average number of wage-earners, as compared with 1922, was 44 per cent; of the wages paid, 57.7 per cent; and of the value of the goods produced, 47.4 per cent. It is probable that the figures for 1924 when available will show a similar progressive advance over those for 1923. Because, though the Pacific Coast region is not yet past the stage of settlement, and there are still vast areas comparatively undeveloped or entirely virgin, the population in various large districts is sufficiently dense to support local manufacturing industries. These industries in many cases will be able in time to produce surpluses suitable for export. But in such cases the trend of export will be rather toward the Orient than to the Atlantic; because in the latter market the Pacific Coast would be competing with manufacturers working with similar facilities as those that obtain on the Coast and with advantage of cheaper labor.

The Panama Canal, aside from its usefulness as an

PANAMA CANAL TRAFFIC BY FISCAL YEARS, 1915 TO 1924.

	Total Traffic		Atlantic to Pacific		Pacific to Atlantic	
	Number Vessels	Tolls	Number Vessels	Tons cargo	Number Vessels	Tons cargo
1915.....	1,075*	\$4,367,550.19				
1916.....	758†	2,408,089.62	522	2,070,993	553	2,817,461
1917.....	1,803	5,627,463.05	396	1,369,019	362	1,725,095
1918.....	2,069	6,438,853.15	874	2,929,260	929	4,129,303
1919.....	2,024	6,172,828.59	915	2,639,300	1,154	4,892,731
1920.....	2,478	8,513,933.15	857	2,740,254	1,167	4,176,367
1921.....	2,892	11,276,889.91	1,180	4,092,516	1,298	5,281,983
1922.....	2,736	11,197,832.41	1,471	5,892,078	1,421	5,707,136
1923.....	3,967	17,508,414.85	1,509	5,459,934	1,227	5,388,976
1924.....	5,230	24,290,963.54	2,125	7,086,259	1,842	12,481,616
			2,740	7,860,100	2,490	19,134,610
Totals.....	25,032	\$97,802,818.46	12,589	42,175,713	12,443	65,735,278

*Canal opened to traffic August 15, 1914.

†Canal closed to traffic approximately 7 months of fiscal year by slides.

avenue for the freights of the world, has recently also been developing as a favorite route for American coastwise tourist and passenger traffic, and still more recently has it become, in a small way, a route for passenger traffic between California points and Europe.

Naturally, as apprehended through all the years, when the trans-continental railway lines opposed the old-time Panama and Nicaragua canal projects, these concerns feel the competition of the waterway. But contemporaneously with the development of the canal traffic has grown up other compensatory trans-continental traffic that the canal can never handle, and which has developed within the past few years in a manner inconceivable less than a decade ago.

Probably not more than 3500 carloads of fresh vegetables were shipped out of California by rail in 1916. In 1924 nearly 66,000 carloads of fresh vegetables were so shipped. About 56,000 carloads of grapes were sent east out of California in 1924 that were practically

unwanted there before the Volstead Act was passed. Some 640 carloads of lettuce were sent east from California in 1916, as against more than 18,500 carloads in 1924. Nearly 91,500 carloads of fresh fruit and 65,800 carloads of fresh vegetables were shipped east from California in 1924, a total of 157,300 carloads.

Most of this was new traffic since 1915, and practically none of it could stand the sea journey around Panama. As conditions stabilize themselves, there will be traffic enough for both railways and canal.

Irrespective of these competitive conditions, however, the Pacific Coast region must profit enormously by the double advantage it now enjoys of a quick sea route and a quicker overland route to the markets of the Atlantic Coast and the Middle West, and a direct sea route for the products of its soil to the now steadily reviving markets of Europe.

[Mercantile Trust Review of the Pacific]

Cooperative Regulation A Plea for Sane Methods

SPEAKING before the National Association of Railroad and Utility Commissioners recently assembled in Washington, D. C., Lewis E. Pierson, chairman of the board of the Irving Bank-Columbia Trust Company and vice-president of the United States Chamber of Commerce, brought to his audience a very eloquent message urging a new conception of their duty to the public and to business interests. His words apply equally well to all regulatory bodies and seem especially framed to form the basic policy which should underly all efforts made by Congress in framing laws and by federal agencies in applying those laws to the American merchant marine.

Here is the conclusion of Mr. Pierson's address:

American business has watched the steady progress of our American utilities. It has seen them grow from small beginnings, from the awkward hope of the inventor and the pioneer, to the strong and prosperous agencies of public service which today form the basis of America's whole industrial fabric. It knows the toil, the planning, the sacrifice which have gone to build up these utilities, the discouragements that have been surmounted, the difficulties which have been overcome. It looks about the nation today, and it sees these utilities spending vast sums of money each year for improvements and new developments. And it recognizes that there has been gathered together in America a trained and skilful array of utility executives, some of whom can show a record of service running back to the beginning of their industry.

The accumulated strength and experience of America's public utilities and of its utility executives must be preserved for the benefit of the nation as a whole. American business is not concerned with utility schedules or rates, with methods of bookkeeping or with franchises and rights of way. It relies upon you gentlemen and the regulatory bodies which you represent to see that rates are just and reasonable and that the public's rights are protected.

American business is vitally interested, however, in the standards of service which the utilities maintain. It is keenly concerned that American industry shall have adequate power to run its factories and ample

facilities for transporting the myriad commodities of commerce. It looks to the future, to a world in which every nation will be striving for industrial supremacy, and it knows that to maintain its place, America must increase the power behind its workers and make its system of distribution even more flexible and efficient than it is today.

It therefore urges upon you, who represent the public in your official dealings, to go beyond the mere letter of your duties. More than any other group in the nation you can stimulate the progressive development of America's utilities. You can show by your attitude that the public desires its utilities to be strong and prosperous. You can make sure that proper incentive is provided to every utility to improve its methods and increase its effectiveness. You can exert the power and influence with which the public has invested you, not to restrict and hamper the forces under your control, but to build up and strengthen these essential instruments of national progress.

The American public wants the utilities of tomorrow to be even stronger and better than the utilities of today. It wants to preserve the advantages which superior facilities now provide for the American worker and the American business man. These ends will be achieved not by public regulation alone, but by the public cooperation which makes regulation intelligent. Regulation is of necessity the brake upon progress; cooperation provides the power that turns the wheels. American business relies upon the utility commissioners of the country to inspire our American utilities by their cooperation to larger achievement and wider usefulness, that they may continue to be the efficient and stalwart servants of the nation's prosperity.

Old Clipper Rescued

The old clipper Benjamin F. Packard has at last found a home, having been purchased from Mandel Neider by Theodore Roosevelt Pell of New York for preservation as a nautical and historical museum. The vessel is to be reconditioned for this purpose and will be moored in New York waters.

Along the Atlantic Coast

Special New York Correspondence

SENATOR WESLEY L. JONES' recent declaration in favor of a ship subsidy has struck a responsive chord in the minds of many other students of the merchant marine problem both in and out of Congress, and it is becoming evident that subsidy legislation will find many supporters at the coming session unless some better plan is put forward. This does not seem likely, although there is good reason to believe that a mail subvention proposition would find more friends than a direct subsidy.

A recommendation for some sort of government aid is expected to be made in the report of the White Committee appointed to investigate the affairs of the Shipping Board and Fleet Corporation. Representative White, the head of this committee, has recently asked the Shipping Board for a history of the action taken by both major political parties on the question of aid for shipping in the past fifty years.

It is taken for granted that President Coolidge will make this report and that of his special inquisitor, Hugh G. Dalton of Cleveland, the basis of his recommendations for shipping legislation in his forthcoming message to Congress. It is known that Mr. Dalton has had several conferences with men who have taken part in the formulation of the ship policy suggestions of the American Steamship Owners' Association.

Pan-America Line

The sale of the Pan-America Line to the Museum Line has aroused considerable controversy over the methods employed in holding out for a higher price after bids were opened. This action by Chairman O'Connor and his supporters on the Shipping Board was not pleasing to President Coolidge, and is calculated to widen the breach which was opened by the persecution of Admiral Palmer. However, this kind of dealing on the part of the Board will probably hasten the day when that body will be sheared of everything save regulatory and advisory powers, and if so it may prove a blessing in disguise. The Pan-America Line is now owned by the same firm which formerly operated that line as a Shipping Board agent.

In this connection a strong protest has been made by the American Steamship Owners' Association against the policy of the War Department in seeking to have two of the vessels of this line allocated to it for transport service. The association makes the point that private companies could handle the transportation of men, materials, and equipment for the department at lower cost and with greater efficiency than are possible under army management. The present policy of the department in maintaining its own transport service, it is further stated, is at variance with the policy of other nations, notably Great Britain, which depend on private lines for such service, the latter being in many cases subsidized with this end in view. In any event, it is held that both steamship lines and the department would be helped by having the traffic handled by the latter at special rates.

The New Commissioner

Appointment of J. H. Walsh of New Orleans as the successor of Frederick I. Thompson on the Shipping Board meets with general approval, as Mr. Walsh has an

intimate knowledge of the shipping industry, being a graduate of the Naval Academy and well known as a naval constructor and an expert on port problems. It is expected that he will favor a progressive policy, including transfer of the government ships to private ownership.

A conference of representatives of shipbuilders, ship-owners, and the various labor groups engaged in the shipping industry for the purpose of formulating a legislative program which can be backed by the American Federation of Labor was suggested by Peter Brady, president of the Federation Bank, in an address before the Propeller Club at its first November meeting. Only by means of such cooperation between capital and labor, Mr. Brady said, can the shipping industry hope to get remedial legislation through Congress. One-sided legislation, he said, cannot get the ear of Congress. The interests of labor must be consulted in order to achieve success. He justified the opposition of the Federation to ship subsidy legislation on the ground that it has not been shown that the industry is entitled to special aid from the government any more than any other industry. Shipping men, he added, have wasted too much time in complaining of their predicament instead of trying to find a way out of it.

It has been hinted that the War Department request for the two ships which has been definitely rejected by the Board, was merely part of a plan to induce Congress to approve the plan for construction of two new passenger liners of the highest type for addition to the Shipping Board fleet, with the ultimate purpose of assigning them to the United States Lines, which is in need of new tonnage to complement the Leviathan and enable the line to meet White Star and Cunard competition in the trans-Atlantic service. The department has indicated that it could not accept allocation of the Agamemnon and Mount Vernon for transport use, as they are too large and costly to operate, their gross tonnage being 19,000 and 18,000 tons respectively, as against 13,700 tons for the "President" ships in the Pan-America service.

Canal Tolls

Another clash is expected in regard to the Panama Canal toll rate in view of the recommendation of Colonel Walker, Governor of the Canal Zone, in his report to Congress that in the event of passage of legislation changing the basis of measurement, the rate be fixed at \$1 per net ton for loaded vessels and 60 cents per net ton for vessels in ballast. The steamship owners, in urging adoption of a single basis of measurement, expressed the opinion that a loaded rate of 80 cents per ton and a corresponding reduction in the ballast rate would be fair, while any higher charge would constitute too heavy a burden.

Miami Boom

During the past month several new services to Florida's boom city, Miami, have been announced. These include the Munson Line, with a freight service; the International Mercantile Marine Company, with the liner Kroonland under the house flag of the American Line; and the American & Cuban Line with a weekly freight service. Lack of docking space, how-

ever, has made the problem of discharging freight at Miami a very difficult one, but it is understood that several dock building projects are now under consideration.

One of the most important developments of the month in respect to new shipbuilding has been the announcement of the International Mercantile Marine of the placing of a contract for a 22,000-ton turbo-electric liner for the Panama-Pacific Line service. This vessel, which is to be ready for service in 1927, is to take the place of the Finland, which may be added to the Miami service if the tourist traffic has developed as expected by that time. At present there is plenty of passenger business for all of the lines. Bookings on the H. F. Alexander have exceeded all expectations.

Rumors have been current of arrangements for a joint service by the I.M.M. and Admiral Lines to Miami, but thus far, it is learned on good authority, the negotiations have been confined to possible joint use of the tender Shinnecock for landing and embarking passengers at Miami.

Boston is coming in for a greater amount of attention from the trans-Atlantic passenger lines. The Cunard Line has recently announced an increase of service from that port to Europe, and the Swedish-American has arranged to start a service with sailings from Boston every three weeks, commencing with the departure of the new motorship Gripsholm on May 7.

Trans-Atlantic Financing

Announcement that the Cunard Steamship Company is about to float an issue of \$7,500,000 5 per cent two-year bonds through New York banking houses has attracted a good deal of attention in view of the fact that this is the first time the company has gone outside of Great Britain for its financing, and that local bankers are known to be decidedly apathetic in regard to financing American shipping projects.

Another new departure by the Cunard Line is the announcement of a new cabin and third class service between New York and English Channel ports, starting with bi-weekly sailings and increasing to a weekly basis by the first of May, when a tourist third cabin service will be added. Seven steamers, the Caronia, Carmania, Lancastria, Cameronia, Ascania, Antonia, and Ausonia, are to be employed. The ports of call on the other side will be Plymouth, Cherbourg, and London. It is believed that the new service indicates an intention on the part of the company to withdraw gradually from Liverpool.

Against I.C.C. Control

Strong opposition to the suggestion for control of the intercoastal steamship lines by the Interstate Commerce Commission is expressed in a report recently

made by the transportation committee of the Merchants' Association of New York. The committee sees in the suggestion, which was put forward in a resolution adopted at the annual convention of the National Association of Railroad and Utilities Commissioners, a plan for an arbitrary advance in water rates for the benefit of the railroads and to the detriment of eastern manufacturers.

Negotiations are reported under way by the Atlantic and Pacific Marine Fruit Express, backed by California fruit growing interests, for the purchase from the Shipping Board of two more vessels of the same type as the Susquehanna and President Fillmore to be equipped for the transportation of passengers, general cargo, and fresh fruits. The company plans a ten-day sailing schedule, it is stated.

American Shipping.

The report of the Shipping Board for the quarter ending October 1 showed a total of 134 privately owned American vessels in foreign trade at the end of the quarter, as compared with 117 at the end of the previous quarter. This increase is accounted for in part by the transfer of the American Export Line ships to private ownership. Since January 1, a total of 29 vessels had been sold by the Board up to that time, Chairman O'Connor stated, while 199 ships and 7 sea-going tugs had been sold for scrap, the consideration for the latter being about \$2,000,000 in cash.

The total number of ships in coastwise traffic at the end of the third quarter was 683, as against 671 at the end of the previous quarter; and the total number of privately owned American steam and motor vessels at the end of the third quarter was 1109, with a total gross register of 5,281,626 tons, of which 91 per cent were in active service.

The total number of American vessels, both Shipping Board and privately owned, engaged in foreign trade at the end of the third quarter, however, was only 566 of 3,424,578 gross tons, as compared with 677 of 4,045,846 gross tons on January 1. An encouraging feature of the general shipping situation was that full cargo freight rates had increased in the third quarter of the year to 97.5 per cent of the 1911-1913 average after having fallen to 96 per cent in the preceding quarter, according to the index compiled by the transportation division of the Department of Commerce.

World Shipping

The chief causes of the present depressed condition of world shipping, according to the annual report of Lloyd's Register, are the surplus tonnage brought into existence by the extraordinary activity of shipbuilders, particularly in the United States, under the compelling influence of war and the shrinkage in volume of the world's ocean trade as compared with pre-war times.



The crack New York-Miami flyer, H. F. Alexander.

American-Hawaiian Steamship Company

The Story of the Efficient War Service of America's Pioneer Intercoastal Cargo Liner Fleet

Installment II

IN August 1914, at the beginning of the European War, the American-Hawaiian Steamship Company owned twenty-six vessels. In 1916 they acquired two more vessels, making a total of twenty-eight.

From November 1914 until April 1917, when the United States entered the war, nine of these vessels were from time to time employed in the trans-Atlantic trade carrying supplies to France and Italy. Altogether during this period fifty - eight round trips were made, carrying more than 100,000 horses and more than 300,000 tons of merchandise to the Allies.

Shortly after the entrance of the United States into the war, the Federal Government took over eighteen of the American - Hawaiian steamers, with which about 145 round trips were made in the government service through the submarine zone. The vessels thus employed carried overseas 125,449 troops and 625,641 tons of cargo. Seven vessels of the fleet were sold during 1916, and three of these, the Nevadan, Nebraskan, and Artisan, were lost by submarine torpedoes while carrying supplies from the United States to the Allies. Of the nine vessels mentioned above as employed under the ownership and operation of the American-Hawaiian Steamship Company for trans-Atlantic service with Allies' supplies, three, the Columbian, Missourian, and the Kansan, were sunk by torpedoes; and of the eighteen requisitioned by the government, the Californian and the Montanan were torpedoed and sunk.

The American-Hawaiian Steamship Company is justly proud of the fact that two of their ships, the Dakotan and Montanan, formed part of the first fleet of thirteen ships carrying United States troops, supplies, and horses to France, passing out of Sandy Hook June, 1917. They are also justly proud of the record for efficiency in service made by these ships and by the splendid personnel among the older officers of the company. So far as the records show, all of the voyages made by American-Hawaiian vessels during the war were made without any delay or breakdown with the single exception of the breaking of the rudder of the Pennsylvanian in rough weather coming home light from France.



George S. Dearborn, founder and first president of the American-Hawaiian Steamship Company

The masters, chief engineers, and other officers of these ships deserve the highest praise and credit for coolness and efficiency in situations of great danger and for the way in which they stuck by the service even after having several vessels torpedoed under them. Captain Lyons of the Missourian took the Montanan when his first vessel had been sunk under him; and when the Montanan was also torpedoed and lost, took charge of one of the Shipping Board vessels. In all, Captain Lyons made more than thirty round trips through the submarine zone. The chief engineers of all of these vessels were with their ships continuously during this war service, and to them must be given much of the credit for the fine performance of the ships and machinery.

Steamship Nebraskan

The first attack from an enemy torpedo was experienced by the steamship Nebraskan while returning light from Liverpool on May 25, 1915. Chief Engineer F. C. Gandell, standing outside his room on the starboard side of the vessel, saw what he took to be the wake of a torpedo, and almost immediately thereafter an explosion occurred, partly flooding No. 1 hold. The vessel returned to Liverpool and while there the chief engineer, with representatives from the American Embassy, searched No. 1 hold and found various pieces of brass with a steel ring, which was obviously that of a ball thrust bearing and was taken to be part of the mechanism of a torpedo.

This incident caused considerable international excitement and formed the basis of several notes between Ambassador Gerard and the German Foreign Office, the Germans finally making a back-handed apology, inasmuch as they admitted that the submarine refrained from further attack when it was recognized that the Nebraskan was an American vessel.

Steamship Columbian

The Columbian was the next American-Hawaiian freighter to feel the effects of submarine war. She had delivered a cargo of horses at St. Nazaire, France, and had cleared for Genoa with steel, copper, soda ash, and general cargo. Off Cape Ortegal, Spain, on November 5, 1916, at 11:40 a.m., with a gale blowing, a German submarine appeared and fired a shot across

her bow. The ship was slowed down and in about a half hour a second shot was fired. The ship then stopped and the submarine maneuvered around her. In the meantime the ship's wireless operator was getting in touch with Cape Finisterre with an S.O.S. signal. The submarine set some signals, which could not be read owing to the thick weather and rough seas, and then started off in a northeasterly direction. The captain of the *Columbian* concluded that the submarine had dismissed him and started full speed ahead, keeping in wireless communication with the cape until about 2:45 p.m., when the submarine suddenly appeared about a half mile astern. The *Columbian* was stopped and the submarine, coming alongside, commanded the captain to stop sending messages or he would shoot. The submarine signaled to send a boat, but the boat was unable to make the submarine and had to return to the ship. The submarine then instructed the *Columbian* to follow and, when weather moderated, to send a boat. At 6:45 a.m. on November 8 the submarine signaled the *Columbian* to stop, send a boat and papers, which was done. The captain of the *Columbian* was taken aboard the submarine and all of the officers and crew put in the boats. The submarine officers placed two bombs in the hold of the *Columbian*, which exploded about four minutes after the last boat had left the ship. The crew and officers, about thirty in number, were taken to the *Balto*, a Norwegian ship standing by. The captain of the submarine, speaking English, asked Captain Curtis of the *Columbian* if he would like to see his ship torpedoed. Captain Curtis replied that he would see the finish. About noon, after maneuvering around, the submarine torpedoed the *Columbian*, using one torpedo and striking her starboard side amidships. She sank in about 55 minutes. Captain Curtis, his officers and crew were then landed at Corunna, Spain.

Steamship Kansan

The steamship *Kansan* on December 8, 1916, while making about 13 knots, hit a mine with her bow, causing a terrific explosion which filled No. 1 hold and drowned a number of horses in the orlop deck. There was considerable of a gale blowing at the time with

high seas and a storm coming on. The vessel was stopped and anchored in Charpentier Roads, and the following day the vessel was moved into shallower water and the the water ballast in the deep tanks and after peak pumped out. Two days later some steel was jettisoned and then tugs were got alongside and the vessel towed across the bar and grounded in the River Loire. The cargo was then discharged, she was drydocked for temporary repairs, and finally got away for New York on April 3.

On the very next voyage the *Kansan* was struck by a torpedo abreast of the engine room and sunk in about seven minutes. This occurred on July 10, 1917, at 12:15 a.m. about three miles off Belle Isle. All of the crew except four men got away in the boats and made land at Belle Isle. It is assumed that these four men were killed by the explosion of the torpedo.

Steamship Missourian

The steamship *Missourian* was caught in the Mediterranean, having left Genoa April 4, 1917, running light on her return trip. About three o'clock that afternoon the captain was called to the bridge by the chief officer, who showed him the wake of a torpedo which had just passed under the starboard quarter. The vessel's course was immediately changed to run parallel to this torpedo. About ten minutes later a submarine emerged and commenced shelling the *Missourian*. The ship was stopped and the lifeboats lowered, and while officers and men were getting into the lifeboats the submarine continued shelling and did considerable damage to the upper structure.

The crew pulled away about two miles from the ship. The submarine meanwhile continued shelling for fifteen or twenty minutes and then maneuvered on the starboard side of the vessel and struck with a torpedo on the starboard quarter. The *Missourian* listed to starboard, settled rapidly by the stern, and finally sank stern first. The submarine submerged without approaching the lifeboats and without any communication with the crew of the *Missourian*. No other vessels were in sight at the time. The captain's boat, which was equipped with a motor, took the other two lifeboats in tow and started toward shore. In about a half hour a patrol boat came out toward the lifeboats. While she was still a mile away the submarine emerged again and fired three shots at the patrol. The patrol, after returning the shots, went back and about an hour later came out with a second patrol boat. These boats took the lifeboats in tow into Porto Maurizio.

Steamship Californian

The steamship *Californian*, in government service during the war, at 4:50 a.m., on June 22, 1918, was suddenly wrecked by a terrific explosion amidships. The ship was immediately stopped and all hands ordered to stand by boats. Water and oil were reported leaking into the forward stokeholds, measurements showing 3 feet in No. 1 hold, No. 2 hold full, and No. 4 and No. 5 empty. A little later the water was over the floor plates and steadily gaining in the engine room. All boats



An interesting view of the old San Francisco waterfront showing the American-Hawaiian Steamship Company's original pier with a sailing ship alongside

were lowered and two boats were sent to the U.S.S. Corsair, which was standing by. An attempt was made to tow the ship by the Corsair, but with no results. At 9:04 a.m. she disappeared.

Steamship Montanan

On August 15, 1918, steamship Montanan, while in company with fifteen other ships bound to Bay of Biscay ports, was joined by a French gunboat and the converted yacht Noma as escorts. Shortly afterwards, 5:55 p.m., the lookout in the crow's nest reported a wake on the port quarter. The captain observed the wakes of two torpedoes at the same time and ordered the helm hard aport. The torpedoes were about a thousand feet away at the time and traveling toward the ship from an angle of about 60 degrees abaft the beam. The ship then maneuvered parallel to the direction of the torpedoes, so that the first passed about 50 feet ahead and the second about 20 feet ahead. However, the Montanan was immediately struck by a third torpedo abreast of the after end of the engine room, bursting the auxiliary steam pipe, filling the engine room with steam and putting out all electric lights. A column of steam and black smoke shot up through the engine room skylight 40 feet high. The explosion tore a large hole in the ship's side, completely demolishing No. 4 boat, also putting the wireless out of commission.

The ship beginning to settle rapidly, boats were ordered lowered away at once, and in the hurry No. 1 and 3 boats sheered off from the side of the painter of No. 3 and caught and dragged several men overboard. Three of these men went down and were drowned before they could be rescued. No. 6 boat turned over in the lowering and two of the armed guard were drowned. Four boats got clear of the ship, carrying the entire personnel of the ship with the above exceptions. After the engine room filled up the Montanan settled very slowly. At 9 a.m. the next morning her decks were awash and she finally went down at 3 p.m. the same day.

Another interesting and rather unusual war service was that performed by the steamship Hawaiian, which, in October and November, 1914, made a trip to the Belgian Congo on the West of Africa with coal and supplies for the relief of the Belgian colonists. The coal was discharged at Banana, at the mouth of the Congo River, to lighten the ship, after which she proceeded fifty miles up the river and delivered some 2000 tons of food at Boma. Both approaching and leaving the Congo River, German raiders were known to be in the vicinity, but fortunately did not come in contact with the Hawaiian.

In the first installment of this story of America's pioneer intercoastal service, it was shown that the organization and the ships of the American-Hawaiian Steamship Company played a very important role in the development of commerce and industry on the Pacific Coast. From the present installment, which gives a sketchy idea of the war history of this fleet, it will be seen that the American-Hawaiian Steamship Company did its bit in a great crisis of world affairs and did that bit well. In the next installment we shall show the remarkable development of the Ameri-



Steamship Californian, built by the Union Iron Works, San Francisco, for the American-Hawaiian Steamship Company, on trial on San Francisco Bay.

can-Hawaiian Steamship Company in the intercoastal trade via the Panama Canal, which has been built up to such huge proportions during the past seven years.

Progress in Reducing Diesel Weights

BURMEISTER & WAIN, Copenhagen, are the world's foremost marine diesel engine builders. They and their licensees have built and engined a very large proportion of the world's motorship fleets. Shipbuilders of the traditional type, they have moved along conservative engineering lines in the development and improvement of their engine design and construction. During the last few years they have been giving serious attention to reduction in weight and without sacrificing dependability and low maintenance costs, have achieved remarkable success.

One of the recent deliveries of this firm is the Chr. Knudsen to Norwegian owners. This vessel had her trials on August 18 last. She has a deadweight capacity of 8400 tons and is equipped with two 6-cylinder, 4-cycle Burmeister and Wain standard, light weight type, fully reversible, diesel engines. On trial these developed 2600 shaft horsepower. Their rating calls for 2500. There are installed, also, three generating sets with total shaft horsepower of 200.

The weight in tons of engine room machinery is as follows:

	Tons
Main engines	164.0
Auxiliary engines	31.0
Auxiliary machinery	11.0
Reservoirs	20.0
Shafting, complete with all accessories, including spare propeller	39.0
Ladders, gratings, floor plates, lifting gear, spare parts, engine room ventilators, telegraph gears, and special tools	19.0
All piping clear of engine and including bilge and ballast piping, bottom valves, etc.	18.0
All electrical material inside engine room	3.5
Water in piping	3.5
Total	309.0

This is less than one-half the weight of equivalent triple expansion Scotch boiler plant and takes up very much less room in the ship.

William Cramp and Sons Ship and Engine Building Company are Burmeister and Wain licensees for the United States.

Balancing Marine Machinery

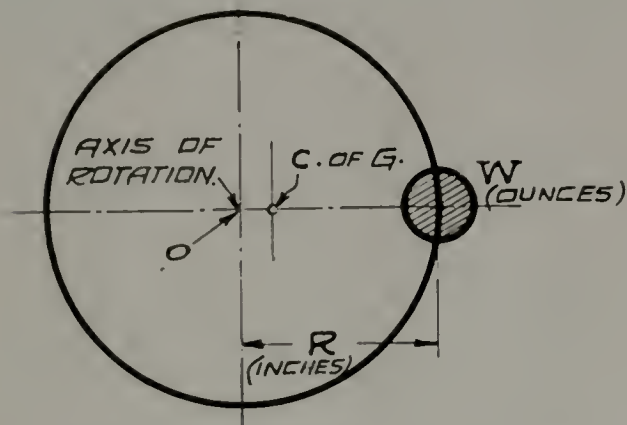
BY COMMANDER C. S. McDOWELL, U. S. NAVY
ENGINEER OFFICER, MARE ISLAND NAVY YARD

IN an article published in the June issue of the Pacific Marine Review I made some mention of the fact that it had been considered very necessary to have the turbine rotor accurately balanced following reblading. These comments were in connection with the repairs to the turbine of the U. S. S. Cincinnati, which had been rebladed on board ship. As the subject of proper balance of rotating parts of marine machinery is a relatively new one, it is thought that

Balancing is not an expensive operation and it has been found entirely practicable to train a number of men in the details of the process so that balancing can be carried out the same as any other part of shop work.

Static Unbalance

I am going to run the risk of boring many readers, who are perfectly familiar with the causes of unbalance, by reviewing the elementary and fundamental facts of unbalance. If we will consider any part which

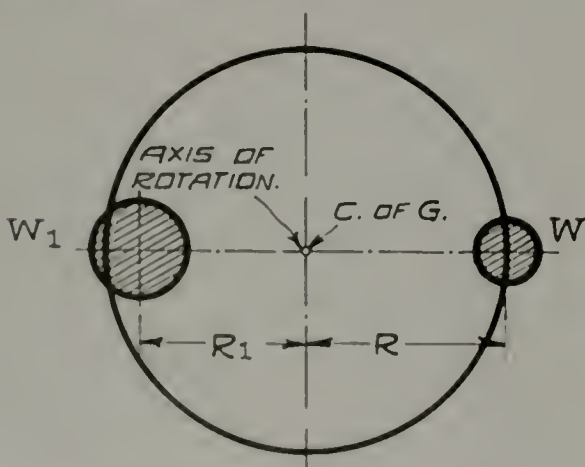


STATIC UNBALANCE.

MOMENT OF UNBALANCE = $W \times R$ INCH OUNCES.

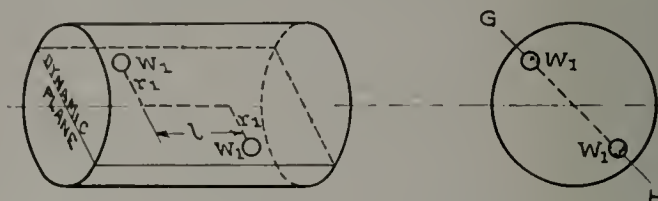
some amplification of the previous brief statement may be timely.

The advent of the turbine made balancing more important than with reciprocating engines, but it is desirable in all moving parts, and the effects of lack of balance at slow speeds and high speeds are only a matter of degree varying with the square of the speed. If all turbine rotors, reduction gears, shafting, etc., are accurately in balance vibration will be practically eliminated and wear on bearings, diaphragm packing, etc., prevented. At the Mare Island Navy Yard it is even the practice to dynamically balance propeller wheels after they have been repaired.



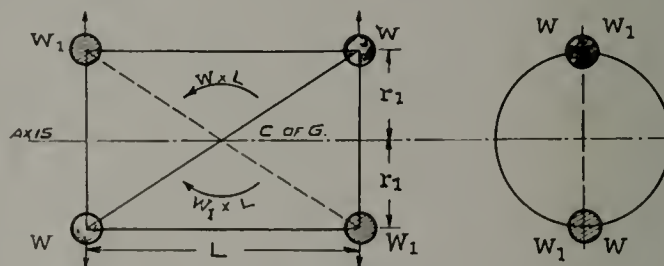
STATIC BALANCE

$$W \times R = W_1 \times R_1$$



DYNAMIC UNBALANCE

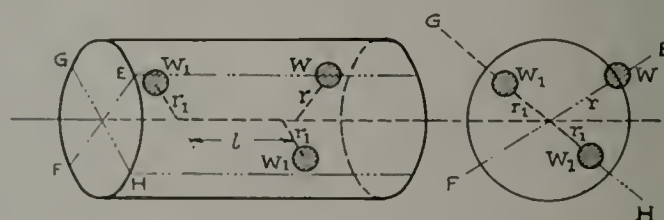
is intended to rotate, as, for instance, a cylinder, as shown in Sketch 1, it will be found as a rule that when this cylinder is mounted on knife edges it will come to rest with some particular spot on the circumference pointing downward. This is due to the mass not being symmetrically disposed about the axis of the cylinder, so that the center of gravity does not pass through the axis. One side of the rotor is heavier than the other and the cylinder revolves until the heavy side is at



DYNAMIC BALANCE

$W_1 \times L$ IS THE BALANCING COUPLE.

the bottom. This is static unbalance and is represented in Sketch 1 by a weight W displaced radially a distance R from the axis. As the cylinder revolves, this unbalanced weight tends to cause the axis of the rotor to move transversely and parallel to itself. If the rotor is restrained by its bearings from movement the unbalanced element sets up vibration and causes excessive bearing wear.



STATIC AND DYNAMIC UNBALANCE COMBINED

E-F IS THE STATIC PLANE.
G-H IS THE DYNAMIC PLANE.

The heavy spot is not, as a rule, a single disturbing element but is the resultant of all unbalanced elements, but static balance of the entire body may be accomplished by the addition or removal of a single weight. This balance is obtained by adding a weight W' in Sketch 2, in the same axial plane and on the opposite side of the axis at such a distance that the equation $W \times R = W' \times R'$ will hold good. It will, of course be evident that instead of adding a weight on the opposite side of the axis a balance may be obtained by removing a weight W' on the heavy side. Circumstances will determine whether it is easier to add weight or remove weight.

Dynamic Unbalance

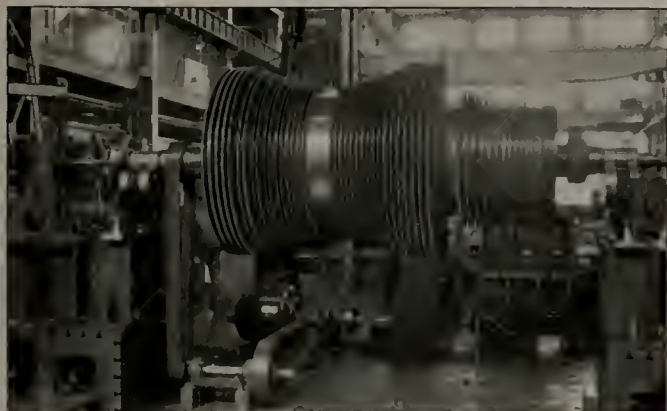
The cylinder under discussion may be in static balance; i. e., have its center of gravity on the axis of rotation, and still be subject to unbalance when revolving at any speed, due to the action of the forces of a centrifugal couple, as shown in Sketch 3. This is dynamic unbalance and its effect is to cause the rotor to wobble and to describe conical surfaces about the axis of rotation.

To obtain dynamic balance it is necessary to introduce a couple in the same plane as the fault producing one, which will exert an equal and opposite force. The value of a couple is the product of the force multiplied by the distance between the forces. The centrifugal force is made up of weight, radius, and (R.P.M.)²; but since the R.P.M. is the same for all parts of the rotor, this factor need not be considered in determining the unbalanced couple. The term as commonly used to express the couple is then composed of radius (inches) multiplied by weight (ounces) and by length (inches) giving a product "inch ounce inches." In Sketch 3, the unbalanced couple is represented by $W \times R \times L$. This is not necessarily the only couple present in the rotor, but rather the resultant of all couples existing in the rotor.

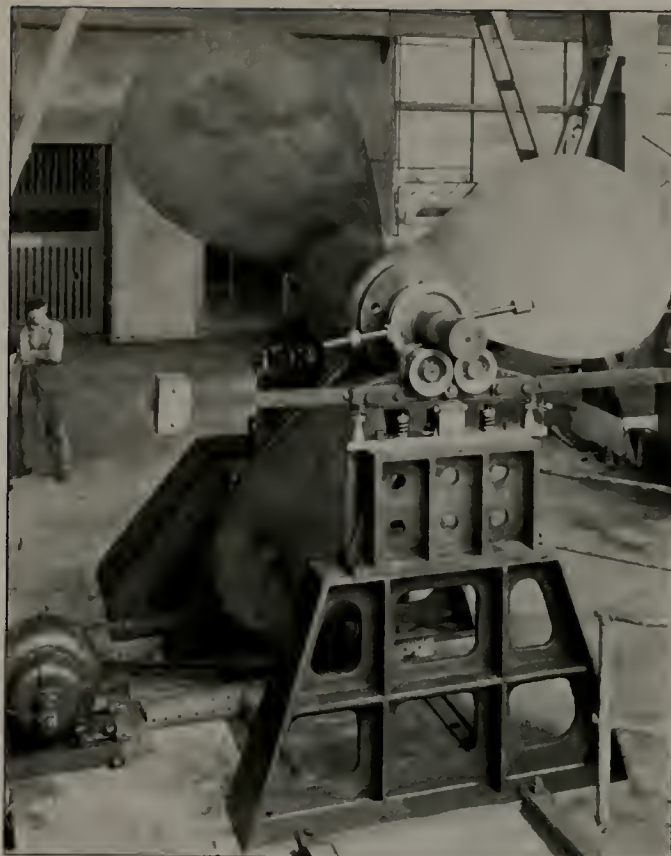
Actually it will usually be found that every rotating body when newly constructed possesses both static and dynamic unbalance. Even if the body, as for instance a turbine rotor, is symmetrical in form there will be enough differences in weights of different blading, shrouding, etc., to cause an unbalance at least of ounces. This is sufficient at the high speeds experienced to cause trouble. Later in service an unbalance is likely to occur due to uneven erosion of blades or by corrosion of different parts of the turbine. One of the most trying causes of unbalance is liquid or other movable weights in a revolving part.

Knife Edge Balancing

It has been the common practice for years to static-



Balancing a turbine rotor



A destroyer's propeller on the Akimoff balancing machine, Mare Island Navy Yard, California

ally balance all heavy rotating parts on knife edges. This balance was accomplished in the factory before final assembly and test. On test, the turbine, motor, or apparatus concerned was run up to speed, and some idea of the extent of dynamic unbalance was determined by observation and, then, by trial and error, weights were added or removed until fairly satisfactory results were obtained. In many cases this process was extremely tedious and the final results were not all that was desired, the apparatus finally being accepted, as no further improvement in freedom from vibration seemed possible. In following this procedure of trial and error, while running, to obtain the least vibration it was often noted that the removal of the weights, which had been installed for static balance, gave smoother running than when the balance weights were in place. This possibility is readily understandable by reference to Sketch 3, in which one of the weights of the couple may be considered as having been added to give static balance but a such a longitudinal distance from the original unbalanced weight as to produce a "couple" and cause dynamic unbalance. The dynamic unbalance so produced may be worse than the original static unbalance.

Balancing Machine

Although static balance may be approximated by means of knife edges, a more accurate static balance is obtained on a balancing machine such as the Akimoff. When knife edges are used there is a certain friction to overcome, and when the rotor has been corrected by adjusting weights so as to be in equilibrium with no particular spot pointing downward, there still remains some slight unbalance.

In balancing a rotor on a balancing machine the static and dynamic unbalance may be found separately, in which case the static unbalance is found first and

corrected, and then the dynamic is found and corrected, or they may be found as a resultant unbalance and corrected either separately or as a resultant correction.

In static balancing on a machine the rotor is brought up to the synchronous speed and by means of attachments the amount and direction of weight to be added to eliminate vibration due to static unbalance determined. It will be readily seen that the results that can be obtained under these conditions must be more accurate than the results obtained when turning a rotor slowly on knife edges.

The details of determining dynamic unbalance are somewhat complicated and vary with different types of balancing machines and manufacturers' formulae. They can, though, be readily carried out by the average high grade mechanic.

Propeller Experiment

In order to determine whether it was desirable to balance propellers dynamically and statically on a machine, or if the common practice of balancing on knife edges only was satisfactory, the Mare Island yard recently carried out tests using both methods. The propeller was first balanced in a machine and the amount of static and dynamic unbalance determined. It was found that there existed a total unbalance of 333 ounces at 30 inches radius, of which total 99 ounces was static unbalance. This data were simply recorded to show the original condition of the wheel and no effort was made to correct the balance.

The wheel was then turned over to another balancing man, unfamiliar with previous results, and the amount of static unbalance determined when mounted on knife edges. By trial weights, an unbalance of 100 ounces at 30 inches radius was found, and the proper amount of weight was removed from one of the blades to bring the propeller in static balance.

The propeller was then again balanced on the machine to determine its condition after the balancing on knife edges. The results obtained showed a total unbalance of 434 ounces at 30 inches radius, of which total 1 ounce was static. This showed that the removal of the 100 ounces to correct the static unbalance had added 100 ounces to the total unbalance.

These results showed very strikingly the danger that is experienced in assuming that a balance on knife edges alone is satisfactory.

In the case of slow speed propellers, the amount of vibration due to unbalance may be slight, and it is not intended to recommend that all such propellers should be dynamically balanced. This, however, is the practice at Mare Island.

Checking Destroyer Turbines

A few months ago a destroyer, on arrival at Mare Island for overhaul, reported excessive vibration of both main turbines at all speeds above 15 knots. The yard felt that the vibration obtained was not from the turbines alone as the bearings and packing showed no excessive wear. It was therefore determined to check all rotating parts both port and starboard.

All four turbine rotors (main and cruising on each shaft), all reduction gears and pinions, and both propellers were sent to the shop for checking and balancing. In addition, all shaft couplings were broken and check made for shaft alignment, which was found to be satisfactory.

In checking the various units in the shop it was found that they were all out of balance. It was necessary to add 19 ounces to one of the main turbine rotors, and 28 ounces to the other. The cruising turbine



Testing double helical reduction gears for balance

rotors were balanced by adding 4 ounces to one and 6 ounces to the other. One of the main reduction gears was corrected for balance by adding 125 ounces, and the other required 500 ounces to correct its balance. All the idler gears were found slightly out of balance, and in addition, loose babbitt was found between the gear blanks of one pinion. It was necessary to spring the gear blanks slightly apart and melt out the babbitt with a torch. Both propellers were found out of balance and corrected.

Following the assembly and reinstallation of the various rotating parts on this destroyer the vessel has conducted runs at all speeds. The commanding officer reports that the vibration has been eliminated and that the entire propulsive equipment is running more smoothly than at any time since the vessel was first put in commission.

The father of scientific balancing in this country is Mr. Akimoff, and most of the machines used for balancing are based on his work.

A few years ago I was on duty at the Schenectady Works of the General Electric Company in connection with the building of the propulsive equipment for a number of battleships, including the California. At that time the Navy had one or more balancing machines installed at most of the navy yards, but many of the commercial companies had not had any experience with these machines, and the shop superintendent at Schenectady was somewhat skeptical as to their value. It was particularly desired, by the Navy, that the mechanical details of the units in manufacture to be as perfect as possible. Electric drive was more or less on trial, and we did not want any mechanical failures to influence the decision as to whether or not electric drive was practicable and desirable for marine use. In view of this I persuaded the General Electric Company to install a balancing machine and balance all our rotating parts on it. It was interesting to note how quickly after this machine was put in use, sentiment became very strong in favor of balancing not only Navy apparatus, but also all commercial apparatus. Very shortly they found it necessary to install addi-

(Continued on Page 557)

Launching the Lexington

THE United States airplane carrier Lexington slid down the ways on October 3 last, at the Fore River plant of the Bethlehem Shipbuilding Corporation in what was reported by expert on-lookers as the "most perfect of launchings." Careful planning and expert workmanship on the part of the plant and navy officials and of the launching crew were responsible for this result, and great credit is due them for the success.

With a length over-all of 888 feet and a beam of 105 feet, the Lexington has a displacement tonnage of 33,000. We do not have her launching weight, but it would be something over 20,000 tons. When this mass of steel hit the water on launching it was traveling at 25 feet per second, or about 18 miles an hour. To brake this huge momentum and bring the hull to rest not too far out, the following novel method was used, probably for the first time in America:

In the sand along each side of the ship had been placed ten piles of massive chain, with an aggregate weight of 1400 tons. Lying at regular intervals, these piles of chain were all bound with heavy steel hauser, the other ends of which were affixed to brackets along the Lexington's hull.

As the stern of the craft reached the water and this great mass of steel was moving at the rate of 25



The Lexington just taking the water



Bow view of Lexington just before launching

feet a second, the foremost pair of hausers snapped taut simultaneously, each dragging its heap of chain through the sand. Then with the ship's gathering greater momentum, pair by pair the hausers took hold of their chain piles, ploughing deep craters in the sand. By the time seven pairs of chain were dragging, the ship came to a stop about 200 feet from the shore, leaving three pairs of chains unused.

The Lexington is to be equipped with steam turbo-electric machinery by the General Electric Company. This will consist of four 35,200 kilowatt steam turbine generator sets, operating on steam delivered from sixteen oil-fired boilers, and supplying current to eight 22,500 horsepower motors. These motors will be arranged in pairs, one pair driving on each of the four propeller shafts. Under the full energy of 180,000 horsepower, the propellers, revolving 317 revolutions a minute, will drive the hull at 33 knots, or almost 39 miles an hour.

The total weight of the propulsion apparatus will be 2200 tons. Each generator set will be about 40 feet in length, and each pair of motors about 34 feet.

In addition to the propulsion machinery, the Lexington will be provided with six 750 kilowatt, direct current, auxiliary turbine generator sets, which will furnish direct current for all electrical purposes except main propulsion. Among other purposes to be served by this auxiliary generating equipment will be the operation of steering gear, anchor windlass, ventilation fans, and lighting systems.



The Lexington slowing up.

Selection of Propellers

Horsepower Versus Propeller Speed

By Lyman S. King, King-Knight Company.

IN the course of the last twenty years I have owned some five motorboats and have installed in these boats about twelve engines of different types; that is heavy duty slow speed and light weight high speed engines. I have tried many propellers on these different engines, some of which were very satisfactory and some of which were discarded almost immediately after being installed. Had I been in possession of the information I now have, many of these discarded propellers would never have been installed and a considerable sum of money would have remained in my pocket; for aside from the initial cost of the propeller itself, the cost of hauling out the boat is a part of the expense of every propeller change.

The question of a proper propeller is one that is always disturbing to the amateur motorboat man and one concerning which I have had considerable difficulty in obtaining proper information. The recommendations made by various engine manufacturers never seem to check; some rate their engines conservatively while others overrate the products of their factory. Some of this overrating is accidental, some is intentional. When the engine manufacturer does not furnish an actual power curve of his engine, or at least the guaranteed horsepower of his engine, for at least three different R.P.M.'s sufficient to plot a power curve, the following formula has been found to be fairly close to the actual performance that can be realized from a marine engine of average design.

H.P. = $\frac{B^2 S R}{C}$ where H.P.—Horsepower.

C

B. —Bore in inches.

S. —Stroke in inches.

R. —R.P.M.

C. —Constant 16,000 for 4-cycle engines.

12,000 for

2-cycle engines.

Aside from the discrepancy in engine ratings of various manufacturers, which of course noticeably affects the choice of propellers, the propeller manufacturers themselves are very apt to make recommendations considerably at variance with each other for the same installation. Further, the published data on the horsepower requirement of their propellers at different R.P.M. seem to vary considerably from the

actual horsepower requirements.

For instance, take a 24x24 propeller, elliptical blades, 30 percent projected area. Curve 1 on plate 1 shows the horsepower curve of this propeller as stated by the manufacturer in his bulletin. This curve varies approximately as the square of the R.P.M., curve 2 of plate 1 showing a horsepower curve varying as the square of the R.P.M.. According to various formulae on propellers by several authorities this should be approximately correct. However, actual installations of this size propeller with which I am familiar when plotted and the exponent determined show that the horsepower actually varies in accordance with the 2.765 power of the R.P.M. Curve 3 of plate 1 shows this curve, the horsepower varying as the 2.765 power of the R.P.M. Known points on this curve are indicated.

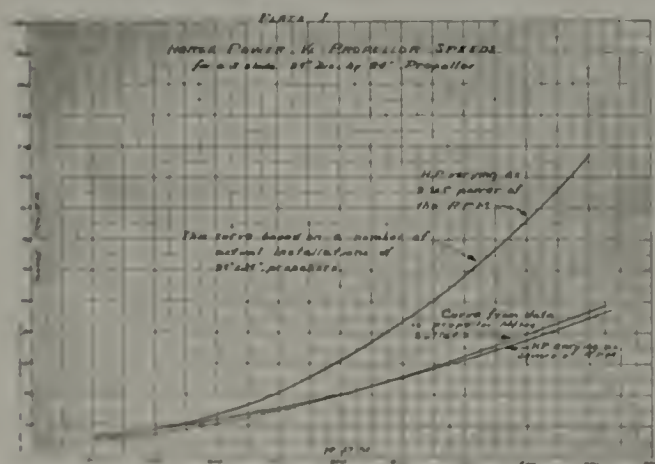
Plate 2 shows the horsepower required by a number of different propellers from 18x18 to 36x34, assuming that the same relationship holds for all of these propellers, which relationship is expressed by the formula

$$\frac{H.P._1}{H.P._2} = \frac{R._1^{2.765}}{R._2^{2.765}}$$

There are some slight discrepancies in these curves. For instance, there is a great proportionate jump between the power required by a 30x30 propeller as compared to a 28x28 and a 28x28 as compared to a 26x26 or a 26x24. The same jump appears between the 24x24 and 22x22 as compared to 22x22 and 20x20. These discrepancies I will not attempt to explain although undoubtedly they are capable of explanation from a technical viewpoint. However, I have not the inclination or the time to go into the details of propeller design.

I feel that the boat owner who has a well constructed boat of good lines will not be far wrong in picking his propeller if he uses the curves given in plate 2. It is an easy matter to plot the horsepower curve of his engine on plate 2 and from the point of intersection with the various propeller curves he can determine what propeller his engine will drive at any required R.P.M. If his boat is an extremely heavy one it will be necessary to use an under-pitch propeller instead of the square propeller using a 1:1 ratio. In picking the over-pitch propeller all that is necessary is to bear in mind that if you increase the diameter 1 inch you should decrease the pitch 2 inches to have the propeller take the same horsepower. For instance, referring to the curve of the 24x24 propeller, 153 horsepower is required to drive it at 1100 R.P.M. If the boat is a heavy one and an engine installed developing this power at 1100 R.P.M., it will probably be advisable to increase the diameter to 26 inches, in which case it will be necessary to decrease the pitch by 4 inches, which would make the pitch 20 inches. A 26x20 propeller will then have the same power curve as the 24x24 propeller. Similarly a 28x16 propeller will have approximately the same power curve and in a case of an extremely heavy boat or an auxiliary or a houseboat, it is quite probable that it might prove desirable to go to some such pitch ratio in order to use the power available as efficiently as possible.

For runabouts and high speed cruisers the probabilities are that it would be desirable to use an under-



Horsepower speed curve for three-blade 24 inch by 24 inch propeller

pitched propeller installing, for instance in the example given above, a 22x28 propeller instead of the 24x24. In other words, it is desirable to keep approximately the same percentage of propeller slip whether the boat is a slow, medium, or high speed one and using a large propeller of relatively small pitch turning at fairly high R.P.M. In a heavy built slow boat, the power would probably be applied as efficiently as in a light runabout using an over-pitch propeller.

In the case of twin screw installations, the power required by any given propeller when both engines are running is reduced somewhat. Thus, for example, in the case of the 24x24 propeller which is just taken above as turning a single screw at 1100 R.P.M. and requiring 153 horsepower, this same propeller will probably turn 1200 R. P. M. in a twin screw installation with two of the same engines which previously turned it at the slower speed. The decreased resistance due to the twin screw installation giving the boat a higher speed thus seems to allow the engine to turn the same propeller about 10 percent faster, developing approximately 10 percent more power.

There are, of course, cases where the design of the boat is such that the diameter of the propeller is restricted. In such cases it will, of course, be necessary to go to the over-pitch propeller in order to hold the engine down to its designed or desired revolution. This will, of course, increase the propeller slip somewhat but in such cases this cannot be avoided.

This article is not written with the view of setting myself up as an expert in propeller design, of which I know nothing. Nor is it written with a wish to enter into any controversy with any propeller or engine manufacturer. My only aim in writing this article is to give to other boat owners, who are not in a position

to avail themselves of the knowledge and guidance of a naval architect, the benefit of what little information I have been able to gather on this subject, and so possibly aid them on their installations.

Naturally the size and type of propeller selected for any boat should be left in the hands of the naval architect designing the boat and specifying the engine. Anyone purchasing or having built a new boat would naturally be guided by the experience and recommendation of the naval architect designing the boat. However, there are many boat owners who undoubtedly will have purchased their boats secondhand, who will install secondhand engines, and who will be unable to avail themselves of the services of a naval architect. In fact, many of these boat owners not only will not have the lines of their boats and will not know the architect who originally designed them, but they may not even know the name of the builders. It is to aid boat owners in this position and those whose pocket books, like mine, are extremely limited that I have written this article.

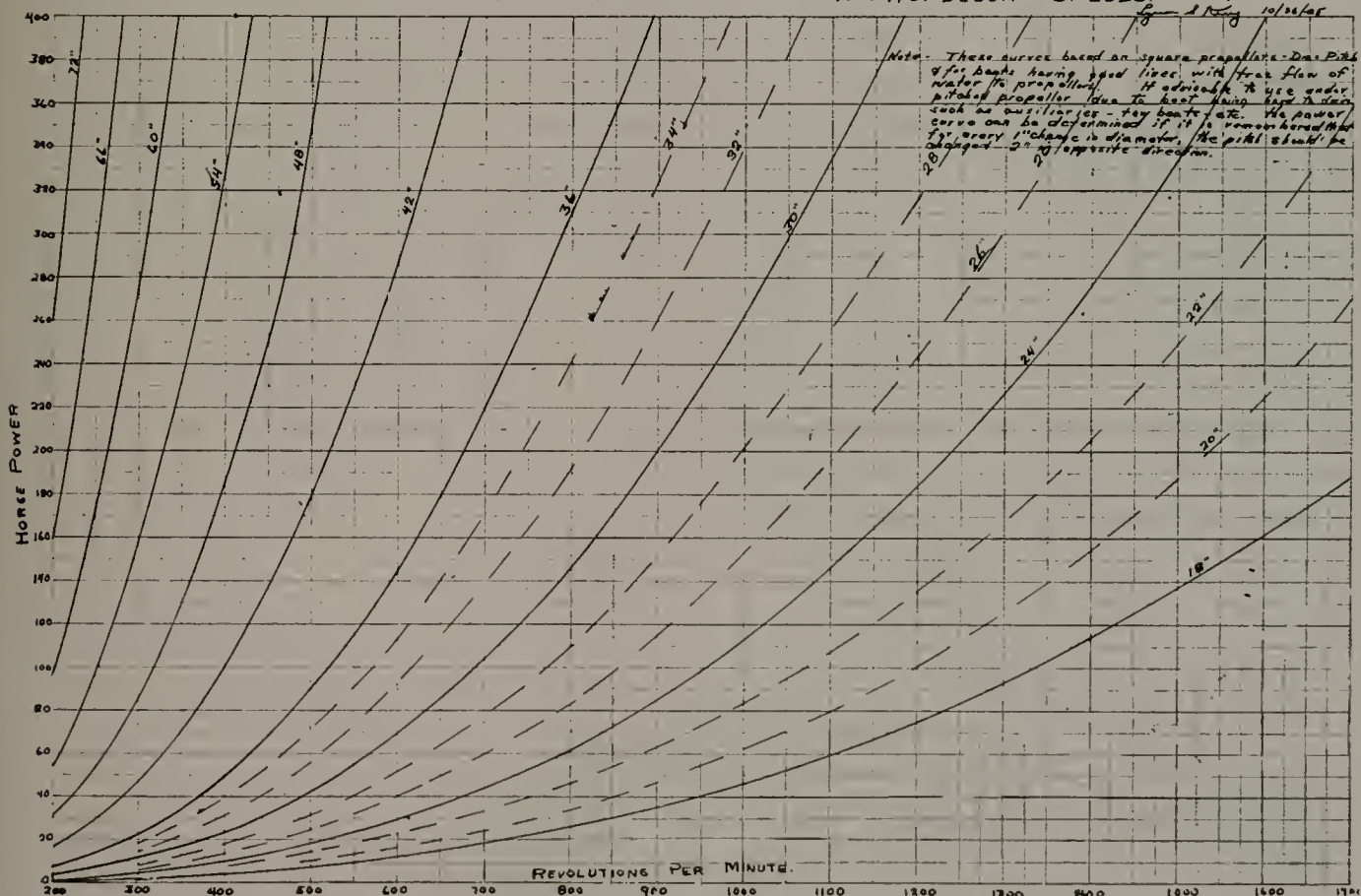
Balancing Marine Machinery

(Continued from Page 554)

tional machines in order to take care of their normal requirements.

We find at Mare Island that our balancing machines are in more constant use than any other part of our shop equipment. We balance, as a matter of routine, every rotating piece of machinery that goes to the shops for repair. The reports we receive from the ships showing universally satisfactory operation of the balanced units well justify our procedure.

PLATE II. HORSE POWER V PROPELLOR SPEEDS.



Marine Oil Engine and Motorship Progress

Diesel Engine and Its Fuel

By LAWRENCE WOLFF

Assistant Manager, Fuel Oil and Asphalt Sales,
Union Oil Company

IT IS perhaps a hazardous thing, in the light of recent developments, to mention the word "evolution" in an introductory paragraph, but when it is applied to denote the transcendancy of present methods of motive power, the whole civilized world may with pride look back on its achievements.

In the evolution of methods of power and propulsion on land and sea we can trace the various improvements, from brawn of man and beast of burden, through the utilization of the elements to the era of steam and the gasoline engine. The coming of steam power gave civilization an instrument that made possible practically all of the essentials that modern social and industrial life demands. But it is logical to assume that the progressive movement will continue, that steam may eventually be superseded by another motive medium. Its prestige even now is being menaced by the diesel engine.

The interest that has been aroused over the diesel motor in the last decade is remarkable for its spontaneity and its widespread character. The reason is not far to seek. Just as primitive methods for generating power were displaced by steam because of its dependability, so is the present tendency toward the diesel engine because of its economy and greater efficiency. The transition is now in progress. The influence of the diesel motor in modern commercial and industrial life extends the world over; and while many stationary power plants have been converted to this more potent producer of energy, it has reached the highest level of efficiency yet attained in marine usage.

The diesel engine derives its name from its inventor, Dr. Rudolf Diesel, who, in 1897 after years of difficult experimental work, completed the construction of the first commercially successful motor at Augsburg, Germany. It was nearly fifteen years later, however, before it was considered practical to use this type of power for the propulsion of large ships. The diesel engine development at that time was fostered principally in Europe and particularly in the Scandinavian

countries, and it was there that it registered its first success as a motive power for large vessels. At the present time the manufacture of large diesel units is making great headway in this country, and while in many instances the general trend of manufacturers has been toward production of oil engines under European license, some of the most prominent American concerns have concluded to follow along lines of their own and their engines incorporate modern features of simplicity and are in many ways noticeable by departures from European designs. To America can also be credited the application of the diesel motor to electric drive, instead of direct. This departure is said to result in more efficient propeller speeds, easier control, greater reliability and reserve power, and a better distribution of weight, especially when used for propulsion of single-screw vessels.

It is only in the last three or four years that intensive development of the diesel engine in large units has been commenced in America. However, although the diesel was conceived and first used with success in Europe and America was slow in availing itself of the new power factor, the typical American spirit of progress has asserted itself, and, by reason of simplified design, engineering resources of powerful competitive factions, availability of materials, and an adaptable market, bids fair to lead the world in the development and perfection of this latest aid to commerce and industry.

There are many variations in design among the different diesel engines at present being constructed, and among the smaller units appear types known as semi-diesel. Often, to avoid confusion with these types, those constructed along the lines of the original invention of Dr. Diesel are designated as full-diesels. Strictly speaking, an engine is either a diesel or it is not a diesel, hence the terms semi-diesel and full-diesel are in a sense misnomers. The former is usually a type in which the fuel ignition is assisted by a surface heater on the cylinder head. This type is more properly known as a surface-ignition oil engine.



A BAY TANKER

The illustration shows the UNION OIL tanker Redline on her trials on San Francisco Bay. The Redline was built by the Moore Dry Dock Company of Oakland and is engined with two Western-Enterprise full diesel engines. She is giving an excellent account of herself in regular every-day service.

The question was asked at a meeting of engineers as recent as 1921 in a large American city, "Just what is a diesel engine?"

There are two essential elements of characterization in the true diesel cycle. These are:

1. Compression of air to a degree that the temperature produced is adequate to the inflammation and combustion of the fuel.
2. Injection of fuel at such a rate that the burning proceeds without rise of pressure in combustion space. (This condition is not realized with absolute precision, there always being a slight rise of pressure when the fuel begins to burn.)

In other words the motive impulse in the diesel engine is furnished by the burning and expansion of the fuel, actuated by no other agency than compressed air, the operation taking place entirely within the cylinder. The distinguishing features of the diesel are that the fuel vapor is not absorbed by air before it is admitted to the cylinder, and that no inflammable mixture of vapor and air is compressed preceding its ignition. Thus the combustion is not explosion-like, but is prolonged at constant pressure for the entire period during which the fuel is injected into the cylinder.

It is this advantage of sustained power impulse developed directly within the cylinder that gives the diesel engine its high efficiency and this, coupled with its fuel economy, makes it the simplest and, at the same time, the most economical power machine. Its commercial value lies in its unsurpassed fuel economy and in its ability to burn low priced liquid fuels. Roughly, a comparison of the fuel consumption of a diesel engine is from one-third to one-fifth of that of a steam plant of similar efficiency and very little, if any, of this economy is sacrificed by higher cost of diesel fuel.

The diesel engine possesses the further great advantage of being a self-contained prime mover, its only auxiliary being an air compressor. Its space requirements are therefore much smaller than that required for a steam plant of the same power for which space must be provided for boilers as well as the main engine.

In a diesel engine stand-by losses, stack, condensation, and radiation losses are nonexistent. There is no time required for firing up, the diesel motor always being in readiness for instant operation. From stone-cold to full load only requires the time necessary for the operator to make the different shifts—a matter of seconds.

The next point which has to be considered is the cost of attendance and repairs, and it is well known thirds of that allowed for other energy producers. This is qualified, especially in relation to steam plant operation, when it is remembered that firemen or stokers for the boilers are dispensed with entirely.

All of these advantages apply alike to diesel operation on land or sea, but they are doubly valuable when applied to ship operation. The advantages of vessels equipped with diesel engines lie not merely in the greater cruising radius obtainable with a given quan-

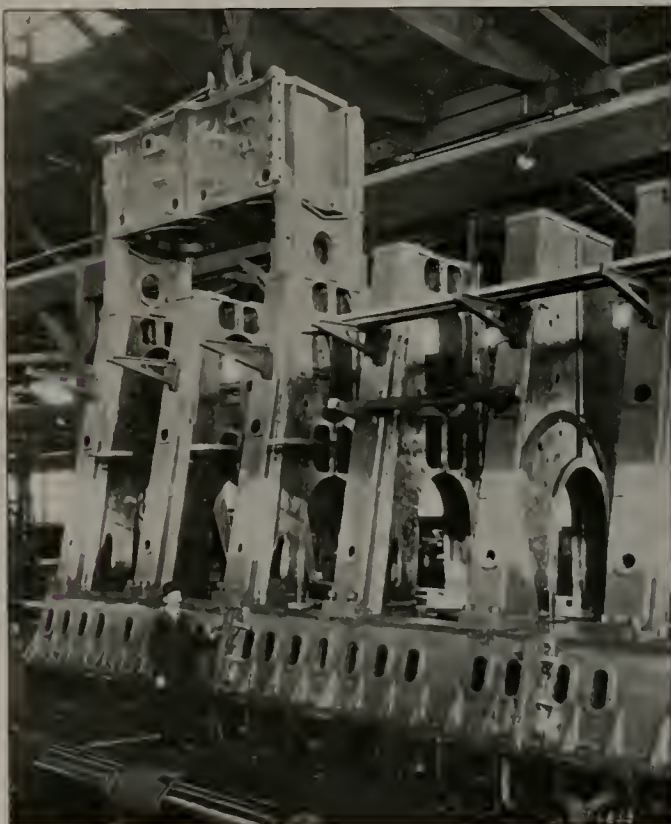
tity of fuel, but in the increased cargo space made available by the fact that less fuel need be carried is a self-contained power unit, reacts on the amount which must be expended on wages, maintenance, etc., and this may be conservatively estimated at about two—that this item may easily reach a figure comparable with the fuel bill. Again, the fact that the diesel and the smaller space occupied by the power plant.

Notwithstanding any other consideration a marine engine must before all things be absolutely reliable and with present day perfection of the steam engine, resulting from over a century of practical experience, it is easy to see that the diesel had to make much progress and to pass through a long period of trial under the severest conditions of operation before it could seriously be considered as a satisfactory medium for ship propulsion. When it is considered that in 1914 Lloyds' Register listed twenty-seven ocean going ships equipped with diesel engines, whereas at present there are over 800 vessels aggregating nearly 1,500,000 shaft horsepower, it may well be said that the diesel engine has served its probationary period. At the present time there are contracts in effect in the United States alone for conversion of former oil-burning steamers to diesel power aggregating over 65,000 shaft horsepower.

Perhaps the greatest tribute to date of the reliability, as well as the advantages, of the diesel engine is evidenced by the selection of this type of power for one of the largest and most palatial passenger liners recently constructed, the Aorangi. This great vessel is 600 feet in length, of 23,000 tons displacement, has accommodations for 1000 passengers and 330 officers and crew. It is owned by the Union Steamship Co. of New Zealand, and plies between Vancouver, British Columbia, and Sydney, Australia. It was built by the Fairfield Shipbuilding Company at Glasgow, and its power consists of four 6-cylinder Sulzer diesel engines, each having 3250 shaft horsepower, or a total of 13,000

A HUGE DIESEL

Our illustration shows a portion of the bedplate framing and one cylinder block of the 3000 brake horsepower Pacific-Werkspoor marine type, fully reversible, diesel engine now nearing completion at the Oakland, California, plant of the Pacific Diesel Engine Company. This engine is to be installed in the Shipping Board freighter West Harts, which is being prepared for that purpose at the Oakland yard of the Crowley Launch & Tugboat Company, Oakland. The contract for the installation of this engine has not yet been let.



shaft horsepower. The engines are directly connected to four propellers which operate at 127 r. p. m. and drive the ship at a normal speed of 17 to 18 knots. The ship's bunker space provides storage for 3000 tons of oil, giving it a cruising radius of 15,000 miles. It is interesting to note that were the vessel driven by steam with oil fuel it would be necessary to provide 9000 tons bunker space, or with coal fuel 15,000 tons to obtain the same cruising radius. On the other hand, with her present bunker space, her cruising radius with a steam plant and oil fuel would be 5000 miles, or with coal, 3000 miles.

Notwithstanding the startling departure from established practice in the motive power of the Aorangi, she will retain the crown as the largest motor driven passenger ship for but a short time, as there are six diesel-driven ships now building that will eclipse her in power and tonnage. Surely this is swift progress for a type of power machinery almost unknown in marine circles fifteen years ago.

Now that the use of the diesel engine is assuming such proportions as a factor in the development of power on land and sea, the question of a suitable and adequate fuel supply looms large in the minds of those interested in its use. As to adaptability of fuel, it is said that the diesel engine could use any fuel that could properly be injected into its cylinders. Coal tar products, creosote oil, lignite products, and shale oils have been used successfully for this purpose, and experiments have even been made with vegetable and animal oils. However, the varying characteristics of these products and their high prices, as well as their lack of universal availability, have resulted in the adoption and virtually total dependence of the diesel engine on the fuel oils produced from crude petroleum.

There is no doubt that most diesel engines can be operated on almost any grade of fuel oil that can be burned under a boiler, whether it be crude, fuel oil, or a refinery residuum. However, the various types of diesels have not yet been standardized to a point where this can be taken as a rule to guide the purchaser of diesel engine fuels. Fuels must be selected for their uniformity so as to make adjustments in atomizing or fuel pump pressures unnecessary. Heavy fuels must be avoided because of the difficulties of injection and their tendency to slow up the engine speed due to slow burning. There is also the tendency of the heavy oils to deposit residue. Diesel engine fuels should be free from corrosive acids which might damage the metal in the valves and cylinders.

These limitations, which under present practical operations of diesels are considered necessary, have nevertheless worked no hardship upon the operator of diesel engines as far as obtaining a suitable, adequate, and economical fuel is considered. The oil industry was quick to meet the demand for a fuel that would meet all the needs of the diesel engine and this fuel, which is usually the last product of distillation from the crude, is available universally under the classification of diesel engine fuel oil. Union Oil Company of California features this grade of oil under the copyrighted trade mark of Diesel. The price of this product is usually very little greater than that of ordinary residuum fuel oil. In this connection it is significant to note that the growth of the diesel engine has been well met by the willingness of the oil industry to meet this growth by making possible an efficient and economical supply of fuel.

There are many who hesitate to adopt diesel engine power lest possible future diminished fuel supply or

rising prices make it difficult or uneconomical to operate this type of equipment in competition with other prime movers. It is true that there is not in storage, above ground, nor is it possible to block out with accuracy, the quantity of oil necessary to guarantee perpetual stabilization of supply and price. On the other hand, there is nothing in the present outlook that indicates an exhaustion of an adequate supply of oil. When demands for increased production have been made upon it, the oil industry has found the oil and sometimes more than they expected. Is it not reasonable to expect that new productive areas will be discovered as the older ones decline? Or, in the event of a diminishing oil supply and higher prices, is it not also reasonable to predict that prices of coal, electric power, and other energy producers will increase correspondingly? Then, there is always the possibility of utilizing, for the diesel engine, the oils that can be produced from other fuels. This distillation of oil from coal and other products obtained therefrom would, in the event of an exhaustion of petroleum supplies, result in a greater return on the whole than the value of the coal itself, and this would not only give the diesel a supply of oil, but would place coal at a medium for use as fuel and thus the economical advantage of the diesel would still be maintained. Enormous fuel resources, yet untouched, are the shale deposits, which are extensive and rich in oil, that could provide a suitable diesel fuel.

On the whole, the most conservative prediction must be that the question of fuel supply, regardless of its source, will not detract from the economical advantage of the diesel engine. It might be further predicted with reason, that nothing in the immediate future will prevent the oil industry from being the medium through which this economical supremacy is realized. This prediction is sustained by the fact that at the present time, new vessels building and stationary plants throughout the world are to a great extent using the diesel engine in larger power units than ever before attempted, so that the majority of operators have satisfied themselves that not only is this type an economical and suitable one, but that they expect to be able to readily secure their supplies at prices that will be satisfactory to them.

Mainstays of Foreign Trade

FOREIGN trade might have its ups and downs but there are certain products which the United States ships abroad bring in steadily increasing amounts. Each year brings a better demand for them than the year before.

The Foreign Commerce Department of the Chamber of Commerce of the United States lists fifteen of our fifty principal exports which have forged steadily ahead with no reverses. The result of this increase is apparent in the magnitude of the gains of these fifteen, comparing their values for the first quarter of 1925 with that of the same quarter of 1922. The value of raw cotton increased 181 percent; automobiles and parts, 250 percent; refined copper, 70 percent; wheat flour, 26 percent; agricultural machinery and implements, 276 percent; cured hams and shoulders, 23 percent; gas and fuel oil, 75 percent; fish, 54 percent; brass and bronze, 295 percent; books, maps, and other printed matter, 31 percent; medicinal and pharmaceutical preparations, 37 percent; paraffin wax, 145 percent; typewriters, 62 percent; paints, pigments, and varnishes, 57 percent; and tools, 57 percent.

Shipowner Praises Diesel

Great British Shipping Magnate Pays Eloquent Tribute to the Dividend-Producing Qualities of the Diesel Engine in Marine Power Plants

IN THE course of his presidential address recently to the Institute of Marine Engineers, Lord Inverforth, head of The Bank Line, gave unstinted praise to the diesel engine as a profit producer in ship operation. Lord Inverforth has operated ships continuously and profitably since the days of sail power. Here is what he says about diesel power on shipboard:

My decision to construct a fleet of diesel vessels was made after most carefully studying the economic aspect of this means of motive power, together with the requirements of our trades, and I was fully convinced that great advantage would be gained by as far as possible standardizing the ships and their engines, including all auxiliaries. By this means officers and engineers can be transferred to any of the vessels quickly, and agents abroad are put to the least possible trouble. From my experience of twelve motor vessels employed, each carrying 9000 tons deadweight, the most satisfactory results have been achieved from all of them. Upon long voyages the speed averages $10\frac{1}{2}$ knots, with under 10 tons of diesel oil consumption per day for all purposes and 10 gallons of lubricating oil per day.

It has been found advantageous to give facilities for special training of engineers ashore to acquire the additional experience required to cope with the conditions of the modern engine; also, to keep continually changing the engineers from ship to ship for provisional qualification, and in this way every assistance is being given to the marine engineer to acquire the requisite knowledge to master the diesel engine, and I am glad to say he has proved equal to all emergencies.

The initial extra capital outlay of a diesel engine compared with the steam engine on, say, an 8000-ton deadweight vessel is about £25,000. This, doubtless, causes shipowners to hesitate in its adoption, because it adds, say, £3 3s. per ton deadweight to the cost of a steam vessel, but the many advantages of the marine internal combustion engine over the steam engine have to be considered.

Advantages of the Motorship

The following advantages may be claimed for the internal combustion engine over the steam engine:

1. Fewer men in engine room.—The boilers being dispensed with for ship propulsion, no firemen are required.

2. Less fuel consumption per day against a steamship of same power.—In the case of a diesel engine the consumption runs from 9.5 to 10.5 tons per day, against the possible consumption of 30 tons in oil-fired boilers and 43 tons in coal-fired boilers.

3. A larger deadweight carrying capacity.—The total weight of the diesel plant compares favorably with a corresponding steam plant. All bunkers can be carried in the double-bottom tanks, thus leaving more space for cargo, which represents at least 10 per cent saving, and which increase is a vital factor in the earning power of the vessel.

4. A longer steaming radius.—The capacity of the double-bottom tanks is usually sufficient so that without rebunkering a motor vessel will run about four

times as far as the steamship, and save the time at and expense of extra coal bunkering ports.

5. The saving of fuel.—No banking of fires being required, diesel engines are ready to start at short notice, consequently obviating all stand-by losses.

6. A great saving as regards speed.—Where we have a loss at the beginning and end of each watch due to cleaning fires in coal-fired boilers, a fixed speed can be maintained in a diesel engine at all times up to the mean effective pressure limit.

7. Saving as regards electric winches.—Where electric winches are in use the diesel consumption for a working day averages about 0.6 of a ton, against $1\frac{1}{2}$ tons on oil-fired boilers, and 4 tons on coal-fired boilers.

Linked up with the advantages of the diesel-driven vessel as against the steam-driven vessel engineers count the absence of dirt and discomfort as of the first importance in maintaining the personnel; this also is a considerable saving both on deck and below in the matter of upkeep and repairs, and I think it would be rare to find any of the engineers wanting to change over to steam. I have found all our diesel-driven vessels making much steadier passages than the steam-driven vessels, and through all weathers, the revolutions being maintained regularly throughout with almost complete absence of racing and its attendant troubles.

Motorship Profits in Comparison with Steamers

As regards their commercial advantages, I have now had the experience of working several motorships during the past two years, and I have not the slightest hesitation in saying that, even in these hard times, the high-priced motorships show a decided advantage over steamships. This is not in trades particularly suitable to diesel boats, but in trading generally all over the world. For instance, with two boats of similar size, one a steamer, the other a motorship, on a voyage from Japan in ballast to Australia, thence homewards with wheat, the motorship will make about £1500 more profit than the steamer, and the above voyage is a very favorable one for a coal-burning steamer, by reason of the relative high cost of oil in Japan and Australia and en route.

I have allowed nothing for saving in wages, and the stand-by losses of main engines.



Motorship Axel Johnson

Bay Tanker General

Atlas-Imperial Engine Company Supplies Diesel Power for Latest San Francisco Bay Electrically Operated Tanker

A DIESEL-ELECTRIC tanker, built by the Bethlehem Shipbuilding Corporation at the Potrero Works of the Union Plant, San Francisco, for the General Petroleum Corporation marks the entry of the Atlas-Imperial Diesel Engine Company into this comparatively new type of marine propulsion.

The Atlas-Imperial stationary diesel is peculiarly adapted to direct current generating set application because of its simplicity and its very sensitive and efficient governing mechanism.

As supplied for the bay tanker General, the Atlas-Imperial power plant consists of two 250-horsepower 6-cylinder Atlas-Imperial stationary diesel engines with 11-inch cylinder diameter and 15-inch stroke, operating normally at 275 revolutions per minute. These engines are of the 4-cycle solid injection type, ignition and combustion being accomplished as follows:

Air is drawn into the cylinder and is compressed by the upward travel of the piston to a pressure of approximately 380 pounds per square inch, heating the air to a temperature of approximately 900 degrees F. A few degrees before the piston reaches the top of the compression stroke, the fuel spray valve is opened and the fuel is sprayed into the heated compressed air which ignites the fuel. The rate

the cylinder is so graduated that its ignition and combustion take place without explosive violence.

Starting is accomplished by the aid of compressed air with a pressure of from 60 to 200 pounds per square inch, from stone cold to full power in 4 to 10 seconds. The amount of air pressure required depends upon the load the engine is carrying at the time of starting. The air tanks and the entire compressed air system are built and tested for a working pressure of 250 pounds per square inch in order to carry a large reserve for unusual conditions, should they arise.

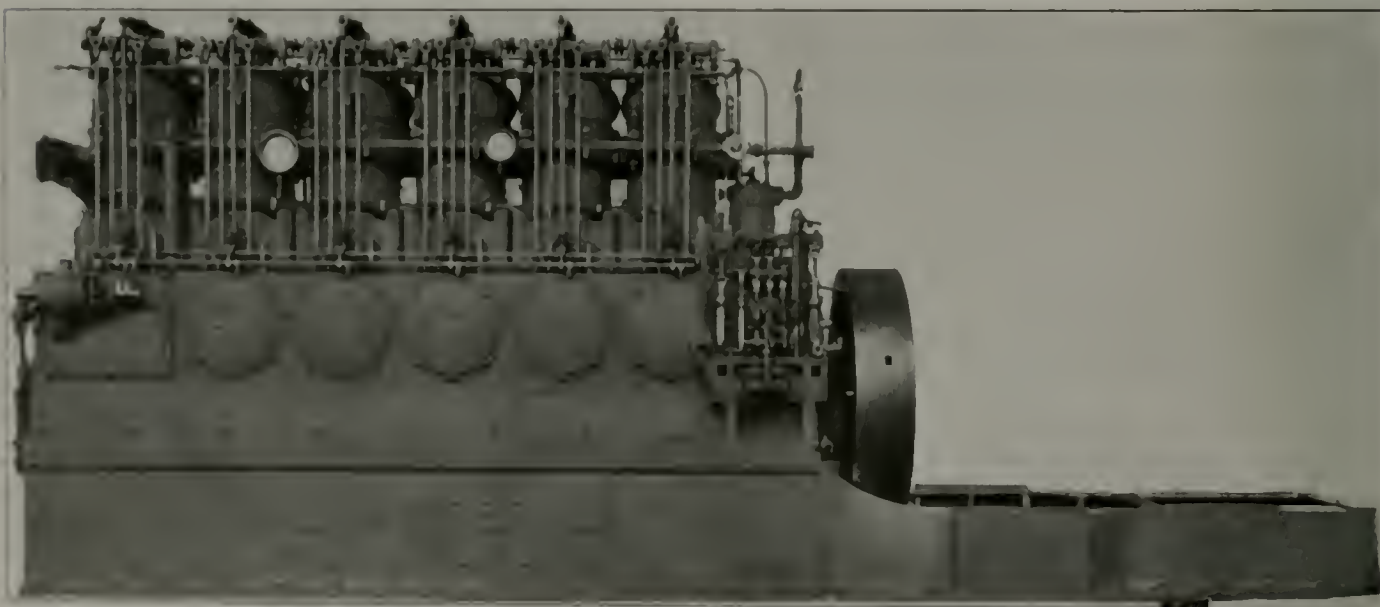
The fuel oil system is of the constant pressure type. The pressure is maintained by three plunger pumps driven by cranks mounted on the cam shaft. These pumps deliver fuel oil into the high pressure system leading to fuel spray nozzle in the center of the cylinder heads. A branch pipe connects each spray nozzle to the high pressure oil system. An additional branch leads to a pressure regulator and relief valve, which regulates the pressure and by-passes all oil not required to maintain constant pressure. The operator can adjust the pressure of the oil in the high pressure oil system as may be required by the aid of a ratchet lever located at a convenient place on the operating platform. The spray valve is mechanic-

ally opened by a cam and properly timed with the cycles of operation to gradually inject the fuel at the proper time for ignition.

The fuel spray valve is very simple in design and construction. The design includes features which have made the solid injection of fuel oil possible with the wonderful simplicity and efficiency attained in Atlas-Imperial diesel engines.

The function of the spray valve is to inject the fuel into the cylinder at the proper time, completely atomized so that the fuel is readily ignited and properly burned within the cylinder. This spray valve is located in the center of the cylinder head and is held in position by a simple clamp arrangement, making it easily removable for inspection or cleaning. The governor on the engine controls the lift of the spray valve so that the amount of fuel admitted into the cylinders is in proportion to the load on the engine. The admission of the fuel is so graduated that combustion is nonexplosive.

While regular 24 degrees Baume diesel fuel is recommended for best results, it is a matter of record that many Atlas-Imperial diesel engines have operated over long periods of hard grinding work at sea on very low grade fuels. The following extract is from a letter written by Captain C. T. Pederson of the Northern Whaling & Trading Company



Common type Atlas-Imperial diesel, 6 cylinders, 250 horsepower, at 275 revolutions per minute, with special bedplate for mounting a direct-connected 175-kilowatt generator and a 20-kilowatt exciter of Westinghouse make.

relating his experiences bucking arctic ice in the Atlas-Imperial powered schooner Nanuk.

"Owing to the fact that we burned up so much fuel without making any headway, we naturally ran short of diesel oil, and we also failed to get much fair wind to help us along. Perhaps it will surprise you to know what your diesel engine will burn. The following are a few odds and ends which we poured into our fuel tank to help out in reaching port:

- "Remainder of diesel oil,
- "A quantity of used lubricating oil,
- "Aviation gasoline,
- "Coal oil,
- "Distillate,
- "Gasoline,
- "Rotten whale oil,
- "The cook's savings of pork grease.

"We did not notice any difference in our engine while running her on the above mixture."

All inlet and exhaust valves are installed in removable flanged cages bolted to the cylinder head, which are interchangeable. The levers operating the valves are on top of the heads and actuated by steel push rods and lifters, provided with large antifriction rollers made of special steel, hardened and ground. The cams operating the valve lifters are ground to gauge in special cam grinding machines, insuring accuracy and absolute interchangeability. The cams are fastened to the cam shaft with keys (not pins) to prevent any possibility of their slipping out of timing.

The speed and power of the engine are regulated by the governor, which is encased within an oil-tight frame and is of the flyball type, gear driven from cam shaft. This governor regulates the power and speed of the engine by wedge adjustment of the lifters opening the fuel spray valve. The pressure in the fuel oil system being constant, the longer the spray valve is held open the greater the quantity of fuel is sprayed into the combustion chamber, and in like manner the shorter period of time it is held open the smaller quantity of oil is injected into the cylinder. The governor regulates this period of opening very accurately and is extremely sensitive. Atlas-Imperial diesel engines can be run as slow as the kinetic energy of the fly-wheel and revolving parts will permit with no manual adjustment whatever except the governor throttle control,



Atlas-Imperial engined schooner Nanuk in the arctic ice.

and can be run indefinitely with full load, no load, or any intermediate point and at a slow or high speed, as desired by the operator.

The governor regulates the speed of the engine to approximately two per cent of normal and will not have a range of over three and one-half per cent from no load to full load, or vice versa, when the load is suddenly applied or removed.

All Atlas engines are built to standards of tolerance which insure interchangeability of parts. Mechanical design and construction permit of highest guarantees of performance. With an assumption of 90 per cent efficiency of generator and exciter, electricity is delivered at the switchboard on a fuel consumption not exceeding 10 gallons of diesel fuel per 100 kilowatt hours.

Gasoline engines are still in demand, in spite of the marvellous advance in diesels. In a marine installation they are used principally where the runs are short, the service light, and quick getaway desired, though in many instances first cost and lightness of weight are considered. The Atlas-Imperial Engine Co. at Oakland, California, finding the demand for gas motors still steady, lately decided to manufacture that class of engine entirely separate from the diesel output.

A new shop was accordingly built, 90 by 100 feet, completely fitted with all tools required for small gas engine building. A force of 25 men is now at work on orders for some thirty sets, ranging from 6 to 16 horsepower. The principal demand is for the 12 horsepower unit, this being used in small open

boats engaged in the fishing industry.

Other lines of employment for these handy engines are also opening up, which will necessitate the increasing of the Atlas-Imperial plant in the near future.

Trade Literature

Westinghouse Electric and Manufacturing Company has just issued, Circular 7378, on **Materials Handling**, that shows the beneficial results to be obtained in the various industries through the use of electrically driven machinery for the handling of materials. This publication is particularly important in view of the fact that electrically driven machinery for materials handling is relieving the man power of the world of the drudgery of heavy work, and releasing this available man power for other, more productive work.

The pages of this circular contain information and data covering the principal groups of materials handling machines, giving their uses, typical outputs, and the electrical equipment best suited for their successful operation, and describes the electrical equipment that the Westinghouse Company has developed for materials handling machinery. Cranes, hoists, winches, conveyors, coal loading machinery, freight elevators, trucks, locomotives, and dredges are some of the types of equipment that are described and illustrated.

This circular may be had from any of the district offices of the Westinghouse Company or from the department of publicity at East Pittsburgh, Pennsylvania.

Pacific Workboats and Their Power Plants

Notes From the Engine Building Shops

BUSINESS still goes on briskly with the Western-Enterprise diesel branch of the Western Machinery Company at their San Francisco as well as their Los Angeles factories. A Pacific Marine Review representative took a run over the San Francisco Works recently and saw several units practically ready for the testing blocks, and two others spinning steadily under the rigid tests which all machines built there are put through. One of the running jobs was of 165 horsepower and will be shipped to San Diego for a new fishing vessel to be engaged in the Mexican coast-wise work. Another 165-horsepower engine is intended as a power operating unit for a southern mine. On the floor were six other engines in more or less advanced stages of completion. There are also orders in for five additional diesels, though active work has not yet been started. Drawings and patterns are in hand, and soon the work of shaping the rough castings and forgings will be going on.

To show the good opinion of the diesel, as built by the Western Machinery Company, it is noted that Captain A. Peters, who for some



THE FISHING FLEET.

The two pictures shown on this page give a little idea of the magnitude of the Pacific fishing industry. Above are shown a few of the boats regularly operating out of Los Angeles harbor. Below some of the same boats ready to deliver sardines at the cannery.

time past has been in command of the fishing boat A. Paladini, engineered by a Western-Enterprise 165-horsepower diesel, has, with his brother, ordered a 110-horsepower engine for their new boat now building at Sausalito by Nunes Brothers. Captain Peters was with the Paladini craft from its first running and has become convinced that the engine is about as good as can be made. The new boat, a 65-footer, should have fine speed with the heavy engine being installed.

Some few months ago Japanese interests at San Pedro ordered two 92-foot fishing boats built for off-shore work. These were to be engined by 165-horsepower diesels. Recently one of these Japanese was in San Francisco and took a trip on the A. Paladini. He came off the boat sold on the idea of more power and changed his order to a diesel of 200-horsepower. The machine first ordered, nearly completed, was sold to parties building a smaller vessel. Then another Japanese, who had given a duplicate order for boat and engine, could not see his boat any less powerful and he also made the change to greater horsepower. This 165-horsepower unit also had a quick sale, and all hands are happy—the fishermen that they will have equal speed and power, and the Western Machinery Company that they sold four engines where two were originally ordered.



Besides the larger sizes mentioned above, there are several smaller engines of the diesel type building for lighter craft. The Western-Enterprise design finds much favor with operators who demand steady output of power at low costs for fuel and upkeep in small units. The Los Angeles factory is also reported to be running full time on the various kinds of machinery built there, though the Western-Enterprise type of diesel for stationary work finds as much favor in that section as the marine type. They have built up a splendid reputation for long runs under full load, a feature necessary for mining, pumping, and electric work.

* * * *

The workboat Dolly C, operated by the Cary-Davis Tug and Barge Company of Seattle, was fitted with a Pacific Diesel Engine Company 150 horsepower unit four years ago. Since that date she has been almost constantly under power, with only one lay off for an overhaul and painting. This record shows that for reliability and standing up under heavy work the diesel is ahead of steam.

* * * *

C. D. Mallory & Co., of New York, operators of the tanker workboat Pinthis, report that the power plant has operated in a most satisfactory way for the past year. She was fitted with a 525 horsepower diesel engine built by the Pacific Diesel Engine Company in August 1924, and has been in constant and continuous service since then. No repairs of moment have been made, and she is still going strong. The fuel consumption has averaged be-



"POP" ANDERSON

Captain H. Anderson is here shown in a characteristic pose at his yard near Hunter's Point, San Francisco. The captain is a fine type of a ship carpenter. A Dane by birth and well on towards his seventies, he is still able to handle the tools of his art with the best of the younger generation. Captain Anderson founded the yard that bears his name in 1893, and has since that time built over four hundred hulls in addition to repairing almost numberless work and pleasure craft. Recently he turned over the active management of the yard to his son, Walter A. Anderson, and to L. Cristofani, for many years his foreman.

tween 14 and 15 barrels per day of 24 hours.

* * * *

The W. F. Stone & Son boat yard at Oakland, California, has commenced the building of a 36 foot motor cruiser for San Francisco owners. She will be powered with a 60 horsepower engine, the type of which has not as yet been decided on. This is the only new job in hand, but repair work keeps things moving at the plant.

* * * *

The workboat Rover and the fishing cruiser Union are at the yard of W. F. Stone & Son, Oakland, being overhauled. Repairs are principally to the hulls. The Union, by the way, is one of the first of the old type fishing vessels operated out of San Francisco Bay, having been put into the business twenty-five years ago. As she is still able and staunch, this shows that good work was done in bygone days. Whanging around outside the heads in the fishing business will try out any sort of hull and gear.

* * * *

The workboat Merry, owned by the San Francisco Bridge Co. and recently built for them by Robertson's shipyard, Alameda, California, is now busily at work. She is engined by a 100 horsepower Union diesel and is giving every satisfaction to the owners. The Merry is 56 feet long by 15 feet beam.

* * * *

The Union Gas Engine Co., San Francisco, recently shipped to Tahiti two sets of 150 horsepower and two sets of 75 horsepower full diesel engines of their latest design. These units will be used in the trading vessels Vahine, Moana, Aneiura, and Potii Raiatea.

The firm sent out men from the shops to attend to the installations, one being in a new hull and others to replace the more expensive gas motor. These are among the first of the inter-island traders to adopt diesels. Further orders are expected from the Pacific Islands soon, as there appears to be growing demand for a reliable and economical power plant on the small vessels trading for copra and beche de mer.

* * * *

The new twin 250 horsepower diesel engines built by the Atlas-Imperial Engine Co. for the General Petroleum Corporation's new fuel barge are being installed at the Union Plant of the Beth-



A busy scene on the erecting floor of the Pacific Diesel Engine Company's plant, Oakland, California.

lehem Shipbuilding Corporation. Each of these units will drive a Westinghouse generator and can be used singly or in multiple on the motor for the propeller. They can also be connected up to drive cargo pumps and other auxiliaries, as fully explained in the October issue of *Pacific Marine Review*.

* * * *

The 6-cylinder, 120 horsepower diesel engine built by the Atlas-Imperial Engine Co. for the new Valentine yacht under construction at Wm. Muller's Yard, Wilmington, California, has been put through her block tests at the works. A *Pacific Marine Review* representative saw the engines running and noted the exceptionally smooth operation. This, however, is a feature of all Atlas-Imperial units.

* * * *

During the month of October over 2400 horsepower was the output of diesel engines built by the Atlas-Imperial Engine Company.

* * * *

One 65 and one 75 horsepower diesel engines were shipped recently to Tahiti from the Atlas-Imperial



Trading schooner Potii Raitea at Bora Bora, South Seas. This vessel is powered with a 150-horsepower Union diesel engine.

Engine Co., where they will be installed to replace gas motors.

* * * *

The Seattle workboat *Amelie*, operated by P. E. Harris Co. and engined by an Atlas-Imperial 165 horsepower diesel, is doing splendidly for her owners. They are very much impressed with the steady performance of the job.

can be located wherever convenient. It is only necessary to run four wires from the control unit in the pilot house to the drive unit.



A Tug and Barge Super.

THE restless little workboats at times need repairs. The builders of hulls and engines endeavor to construct them so that not much of this is necessary. However, everything wears out, and the workboat is no exception to this rule. An early knowledge of defects sometimes saves time and dollars by a prompt cure, so any aggregation of workboats needs a marine superintendent the same as the big vessels.

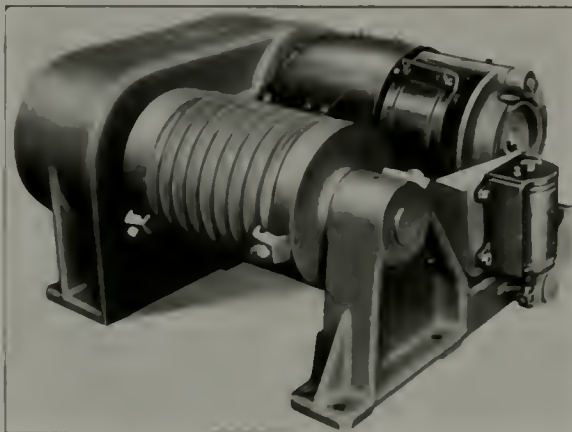
Charles Rogan is one who attends to these matters for the Harbor Tug & Barge Company, of San Francisco and Oakland. This gentleman has been identified with the firm for some time, and under his direction the splendid efficiency of the fleet has been kept up. While very unassuming and at all times strictly business, he is a "regular feller," always smiling and cordial. Coming from the Atlantic Coast several years ago, Mr. Rogan has made many friends along San Francisco's Embarcadero. His thorough training as a mechanic and handler of diesel engines enables him to detect faults and apply remedies with the least possible delay.

The Wilson Shipbuilding Company, of Portland, Oregon, is installing a 170-horsepower 6-cylinder diesel engine in the Columbia River pilot boat *King and Winge*.

New Power Steerer

A NEW type of electric steerer is being built by The American Engineering Co. of Philadelphia for use on small workboats or pleasure craft where the cost ordinarily might prevent the use of power steerers. This steerer consists of a very small, compact, and efficient motor drive and a drum to take the rope from the tiller or quadrant. The gearing between the drum and the motor is of the spur gear type and is totally enclosed, running in an oil bath on roller bearings. The control unit in the pilot house is a nonmagnetic bronze column, with a wheel of bronze or inlaid mahogany with bronze hub. It consists simply of a motor controller operated by the wheel.

A slight turn of the wheel from the center position throws on the current in the motor, rotating the drum until the rudder is turned through the desired angle. Returning the wheel to the center position turns off the current. When the current is thrown on it



New electric steerer especially adapted to workboat and yacht installation.

passes through a solenoid which releases the holding brake as the motor starts. The moment the current is turned off the holding brake is automatically applied. This brake checks the motion of the rudder instantly and holds it at the desired angle until the wheel is turned again.

No current is consumed except when the rudder is being moved. The positive action of the steerer insures instant response to the wheel at all times and eliminates all drift or lag. The gear is a self-contained unit of the non-follow-up type and

Auxiliaries-Ship Supplies-Marine Equipment

New Steam Generator

The Foster Marine Boiler Corporation Introduces a Unit Boiler Design Including Built-in Radiant Superheaters and Feed Water Economizer

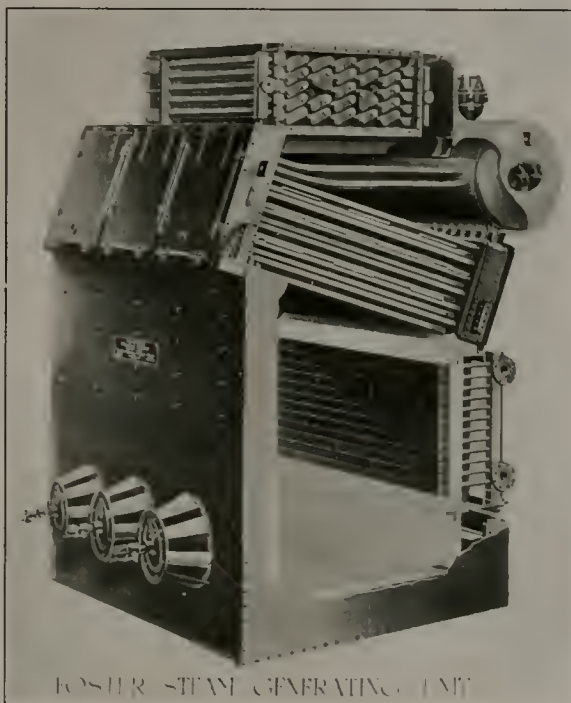
DURING the past five or six years American marine engineers have been paying very close attention to the design of marine steam power plants, particularly in respect to the improvement of boiler equipment. This has been particularly noticeable in the general tendency to use water tube boilers and in the many improved designs for oil burners. This tendency is quite in line with the best improved practice on shore. The boiler room is the heart of any steam power plant. It is the source of power, and economies at the source are oftentimes of more basic importance than are those at the point of application.

For several years the Foster Marine Boiler Corporation has been studying this problem and they are now prepared to supply marine steam plants with a complete unit, including boiler, superheater, and economizer in one casing, as shown in the photo engraving reproduced herewith.

As will be noted from an examination of this design, the boiler is of the large straight tube cross drum type, the headers stay-bolted, permitting the use of a large water reserve low down in the boiler so lower tubes will always have an ample supply of water at all ratings. This use of stay bolts in the headers gives a safe, substantial structure and by the use of hollow stay bolts for soot blowers eliminates a large number of doors in the side casings with consequent air leakage.

It will be noted also that a very large furnace volume is provided which tends toward better furnace efficiency and increases the working life of the furnace lining.

One of the great features of this new design is the installation of Foster radiant heat superheater elements built into the furnace walls.



This feature allows of the maintenance of any desired superheat without opening up the boiler structure and changing the same to get space for superheater elements. The black surface of these elements absorbs radiant heat in the furnace and thus protects the lining from excessive temperatures.

The usual capacity of a water tube boiler is about five pounds of evaporation per square foot of heating surface. If such a boiler be installed it will be found that when the hot gases from the combustion have passed over about 60 per cent of the boiler heating surface they have completed 90 per cent of the work of heating and evaporating the feed water, and at this point of about 60 per cent of boiler surface used the evaporation per square foot is only $2\frac{1}{2}$ pounds. The gases at this point in the marine water tube boiler would range around 700 degrees, having started at a temperature of 2500 degrees.

The Foster steam generating unit eliminates all boiler surface beyond this point and uses the hot gases at the temperature around 700 to work

on an enlarged tube surface in the nature of an economizer built into the unit. The function of this economizer is to heat the feed water up to practically steam temperature, thus allowing the boiler heating surface to work purely as an evaporator. This method is now used in practically all modern shore-side plants, and there is no reason why its benefits should not be derived in marine plants.

An economizer of this type not only is of great importance in the matter of fuel economy, but it also very favorably affects maintenance costs. Water heated to steam temperature deposits nearly all of the soluble salts or other matter in suspension. This material deposited on the walls of the economizer tubes is in the nature of a soft mud, which is easily removed. If the same material had passed through in solution to the bottom rows of boiler tubes and been deposited there it would at the higher temperatures be baked on the inside of these tubes in the form of a hard scale.

In cases where extreme economy is desirable, the economizer should, and easily can in this design, be of an area equal to 75 per cent of the heating surface of the boiler.

It is claimed that the Foster steam generating unit is the first marine unit designed with these fundamental improvements incorporated in the unit itself. It is built in various sizes for any normal steam pressure, superheat, or feed water temperature. It will give on test efficiencies of from 80 to 90 per cent and with a final stack temperature of from 250 to 400 degrees Fahrenheit, depending on the amount of economizer surface. The weight is about the same as that of the old style boiler for the same area of heater surface.

Berry E. Dunn & Co., of 238 Sacramento Street, San Francisco, is California distributor for the products of the Foster Marine Boiler Corporation.

Fittings for High Steam Pressure

IN view of the present tendency to greatly increase steam pressure in marine plants, it will be of interest to marine engineers to know that valve and fittings manufacturers are keeping abreast if not ahead of this phase of development. The Walworth Manufacturing Company, Boston, Massachusetts, announces that fittings made of Walworth Sigma Steel can now be obtained conforming to the proposed American steel flange standards for 250, 400 and 600 pounds working steam pressure, and total temperatures up to 750 degrees Fahrenheit.

These fittings are the first of a complete line of Walworth products which represent a new technique in steel making as applied to fittings and valves developed by X-ray tests conducted over a period of several months at the Watertown Arsenal.

Walworth Sigma Steel fittings and valves make possible a new margin of safety for the control of steam and fluids under high pressures and temperatures.

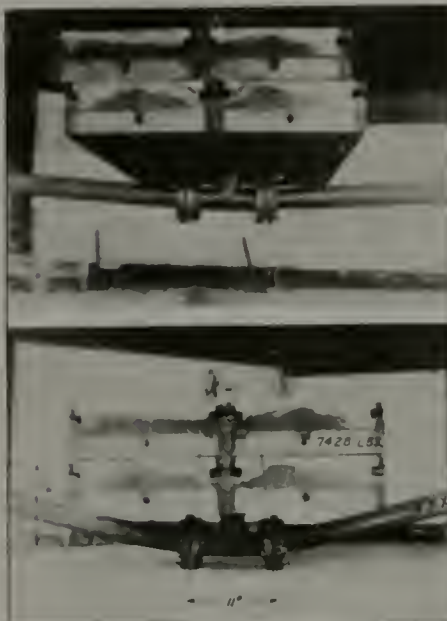
In order to determine the physical properties of the new line of Walworth Sigma Steel flanged fittings made to the American Engineering Standards Committee tentative standard dimensions, a 4-inch 400 pounds working steam pressure flanged tee was tested at Kewanee Works in the following manner:

The fitting was given a hydrostatic pressure test, 2500 pounds per square inch, a little over six times the rated steam working pressure. No leaks developed, the fitting remaining absolutely tight through the test.

A 10-foot length of 4-inch double extra heavy pipe with a screwed steel flange on one end was bolted to each run opening of the fitting, which was then supported on 18-foot centers with the branch opening upward. Next, a weight of 3714 pounds was placed upon the branch flange of the tee, which forced the flange downward a distance of 29.16 inches. A second weight of 3714 pounds was then added and gradually lowered by the crane until the fitting touched the floor, making a total deflection of

27.16 inches, leaving a permanent deflection of 22.78 inches.

The pipes on the ends of the fitting were then removed, care being taken to determine whether the bolts had stretched, and it was



Unusual test applied to Walworth Sigma steel Tee.

found that the two lower bolts in each flange had stretched very slightly, as indicated by a little less power being required to loosen the nuts than on the other bolts. The fitting was then very carefully examined and showed no visible defects other than the stretching of the lower wall and the compression of the upper wall, making the body and the branch of the fitting somewhat elliptical. The face to face length of the fitting above and below the raised face, which is 6 inches in diameter, was then carefully calipered and these faces were found to be 96.100 inch out of parallel.

The fitting was then taken back to the test pump and again tested O.K. at a hydrostatic pressure of 2500 pounds per square inch.

This remarkable test demonstrates quite conclusively that the design of the fitting is satisfactory, that the casting was sound, and that it was properly heat treated.

The rugged and substantial flanges provide sufficient strength and rigidity to assure a tight joint at all times and to withstand extreme bolting and pipe line stresses; while, on the other hand, the comparatively light body wall

connected to the flanges by ample fillets furnishes a flexibility in the fitting somewhat comparable to that of the pipe line itself.

The soundness and freedom from flaws of the casting is definitely shown by the fact that the fitting was tight under a hydrostatic pressure more than six times the recommended working pressure both before and after the distortion test.

And finally, the proper heat treatment is clearly demonstrated by the extreme ductility of the metal, permitting considerable elongation of the body wall opposite the branch opening and distortion of the body on both run and branch without developing any sign of weakness or rupture.



Heavy Haskellite Orders

THE largest single plywood contract of the year has just been awarded to the Haskellite Manufacturing Corporation for the three new Merchants and Miners Transportation Company's ships now under construction by the Newport News Shipbuilding and Dry Dock Company.

A total of 60,000 square feet of 7/8-inch Haskellite will be used for the bulkheads of these ships. In addition there will be used 15,000 square feet of Plymetl for the partitions of all bath rooms and toilets.

The Plymetl installation will be the biggest of its kind ever made in a passenger ship, and is indicative of the strong tendency on the part of architects and shipbuilders to recognize the necessity of reducing weight and cost, at the same time adding fire protection. The Haskellite Manufacturing Corporation recently announced the perfection of a new type of Plymetl made with Monel metal faces, and expect shortly to be in a position to make deliveries of this material.

In addition to the Merchants and Miners ships Plymetl has been installed in the steamship Munargo of the Munson Line, the steamship Bear Mountain of the McAllister Steamboat Company, the Mary Weems of the Baltimore and Carolina Steamboat Company, and the steamers State of Delaware and State of Pennsylvania of the Wilson Steamboat Company.

Sperry Demonstrates Earth's Rotation

Unusual Exhibition at the New York Marine Show

P. R. BASSETT

THE earth rotates about its axis making one revolution every 24 hours. No one will contradict this statement. We all believe it and in fact take it entirely for granted without ever thinking to ask that this important fact be actually demonstrated. When asked how we know that the earth turns, most of us must confess that we learned it in school. This fact is one of those remarkable things of which we are quite unconscious directly, and yet we all believe it as a result of the accumulated knowledge of science and astronomy through the centuries. We still say the sun rises and sets, yet we know that in reality it is ourselves who do the rising and setting on our daily round trip with the earth.

It would therefore be of more than passing interest to see a visual demonstration of the earth's rotation set up in a room with simple apparatus and without any reference to the sun or celestial bodies. A means of accomplishing this is now possible with an especially mounted and carefully balanced gyroscope. The Sperry Gyroscope Company prepared such a demonstration at their booth in the Marine Show held at New York November 9 to 14. The earth's motion has even been magnified to a point where the observer may readily see the pointer crawling along over the scale without having to wait for any appreciable time to elapse.

A gyroscope is a spinning wheel. When a gyroscope is mounted freely in space with all friction reduced to a minimum and no forces acting on it, it exhibits the unique property of holding the direction of its spinning axis fixed in space. The earth itself is a large gyroscope free in space and it shows this same property in constantly keeping its axis pointed toward the North Star.

The gyroscope used in this demonstration is a fifty pound bronze wheel, electrically driven at a speed of 6000 revolutions per minute. The wheel is mounted in a casting which is in turn mounted in a vertical ring. The gyroscope and ring are suspended by a long steel wire from the roof of the Armory Building, so that it is as

nearly out of contact with the earth as it can be made. All parts of the apparatus are very accurately balanced so that gravity cannot cause any force to act on the wheel. Under these conditions the free spinning body takes up its own work of holding a fixed direction in space irrespective of what its surroundings are doing.

All our senses tell us that its surroundings and the building in which it is hanging are standing still. Yet we know that the earth turns around once every 24 hours and hence the building must also turn around once every 24 hours.

On watching the gyroscope, it is evident that something is turning slowly and steadily. It looks as though it were the gyroscope, but strange as it may seem we are witnessing the building and ourselves turning slowly around as the earth carries us around with it. This little demonstration gyroscope is the only thing in the entire world that is holding itself truly fixed in direction. By using a reflected beam of light from a small mirror carried on the gyroscope, the motion of the earth is actually magnified to a point where it is very perceptible and the crosshair is seen to crawl steadily along over the scale. As the motion is uniform the scale is graduated into minutes.

This instrument could rightly be called a gyroscopic-clock. It will tell time just as the sun-dial will and from the same cause, since both depend on the earth's rotation. If it were perfect it would make a round trip in 24 hours and be back at the starting point one day later, but unfortunately the instrument would fail in such a long trip since the roof of the building would slowly twist the suspension wire as it turned until the gyroscope would be disturbed by the twist and would no longer be free. To prevent this accumulating twist the gyroscope is therefore set back about once every half hour and allowed to repeat its path.

This gyroscope, as is quite evident, is not a gyro-compass. Instead of holding to the North, it is apparently turning to the East. Only one property of the gyroscope is manifested in this gyro-clock,

that is, fixity of direction when undisturbed. Additional elements are utilized in making the gyroscope behave as a compass. Instead of leaving the gyroscope free and balanced, as in this demonstration, a ballistic or special weight is added which causes gravity to act on the gyroscope whenever its axis departs from the meridian. The gravity force causes the gyroscope to turn (precess) back to the meridian and holds it there.

The Gyro Pilot at the Show

ON November 9, 1925, the American Marine Exposition opened its doors to what is considered one of the most complete and interesting exhibits of marine progress ever held in America. Two years ago at the last exposition of this kind, the Sperry gyro pilot was one of the most interesting and most-talked-of exhibits. During the short twenty-four months since that time, this automatic steering device has been supplied to varying types of craft ranging from the Leviathan and Berengaria, of approximately 50,000 tons burthen, to the small 35-ton motor launch *Amo II*, owned by the Hon. A. E. Guinness, or to A. F. Gowan's auxiliary schooner *Speejacks*.

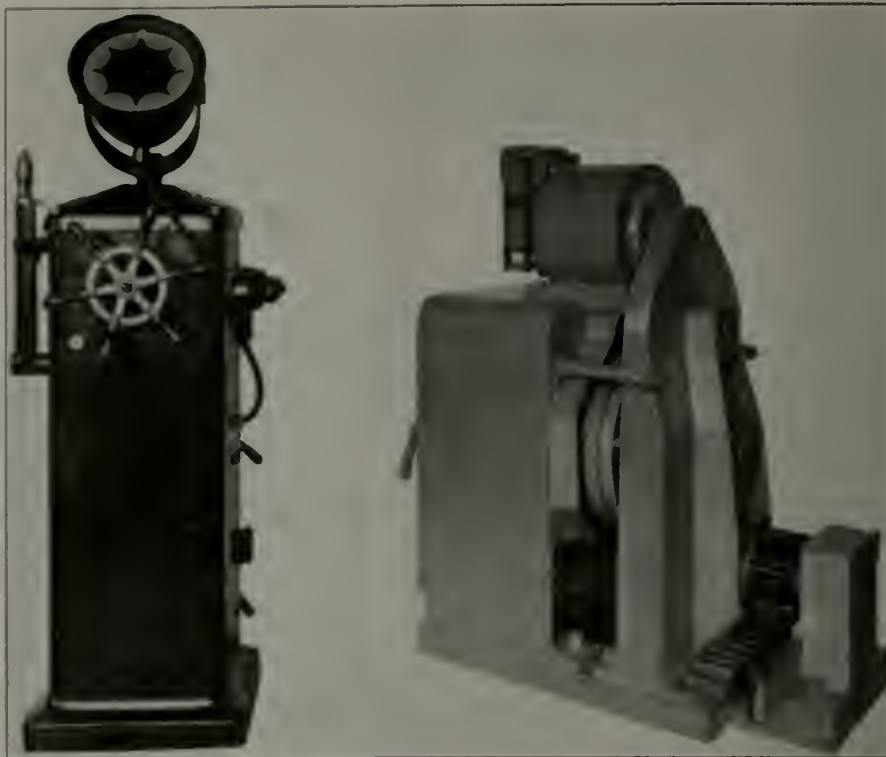
There are those who are still a little apprehensive as to the feasibility of a machine being capable of performing the hitherto human function of steering. To them it will be of interest to know that the flexibility of the apparatus is such that standard gyro-pilots were supplied to each of these extreme classes of vessels possessing such vastly different steering characteristics.

The New Two-Unit Pilot

At this year's exhibition, the new two-unit gyro pilot makes its debut. This new model in no way displaces or supersedes the original unit, but has been introduced to satisfy a demand which exists for an automatic steering apparatus which is entirely independent of the telemotor system. Thus, instead of the gyro pilot controlling the steering wheel by chain and sprocket drive, the mechanism is

divided in such a way that the control and control mechanism is on the bridge, as hitherto, but the power unit is aft and operates the valve on the steering engine direct. It will readily be seen that by this means the lost motion in the tele-motor system, which so often prevented full efficiency being maintained, can have nothing to do with the proper operation of the equipment. Furthermore, it has the obvious advantage of giving to the ship two distinct systems of steering control so that should either fail there would still be an adequate connection between the bridge and the steering engine.

In addition to this type of power unit for ships equipped with steam steering engines, another is made for use in connection with the electric or electro-hydraulic steering gear.



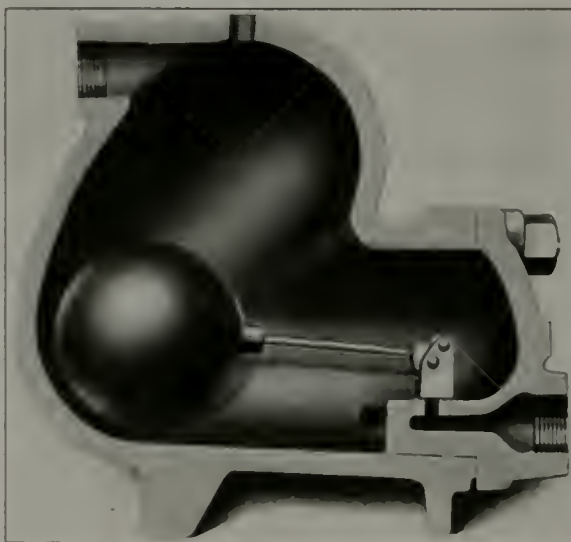
The new 2-unit Sperry Gyro-Pilot.

Davis Engineering Exhibit

IN keeping with the general trend toward simplicity in steam trap design, there has recently been perfected by the Davis Engineering Corporation of 90 West Street, New York City, what is probably one of the most simply constructed steam traps yet made.

Working on the principle that the less complicated the valve is, the less chance there is for trouble in the trap, this new steam trap, which goes under the trade name of Paracoil, has reduced the moving parts to one and practically eliminated wear in the valve seat.

The Davis Engineering Corporation have been making steam traps for years, and it is over two years ago since this new design was put in use. Extensive laboratory tests and many actual tests in some of the biggest plants in the country over this two year period have proved the practicability of the new valve; so that it is now being



The Paracoil Steam Trap shown in section.

generally released to the industrial trade.

The valve of the new Paracoil trap works on the simple principle of a sphere, with a recess in it, rotating (not lifting) over the valve seat and thus opening and closing the port.

This means that the sphere wearing on the cylinder edge of the port continues to make a perfect seat. Even after long wear, it still has a knife edge and tight con-

tact, thus keeping a perfect seal in addition to the water seal. Long leverage and a large unbalanced float give the valve a powerful closing action and keep it from becoming sluggish.

The conical recess in the ball of the valve not only makes possible a continuous flow of the condensate, as the float gradually rises and falls with the water-level, but it also acts as a gouger to scoop out any foreign substance which might lodge in the valve seat, thus eliminating excessive wear at this important point.

The constant flow of condensation means that there is no intermittent spasm, which in an ordinary trap throws the whole interior into violent agitation, puts violent stress in the trap structure, and causes a possible water hammer.

The float is of heavy spun copper and so designated that at no time can it ever touch any part of the trap shell. The valve itself is of aluminum bronze and the ball is bronze. The body and its gasketed cover are of cast iron, although other materials can be used if specified.

Traps are designed for all pressures, but 30 pounds steam pressure, 125 pounds, and 250 pounds are carried in stock as standard. Several Paracoil traps were on exhibit at the Marine Show, New York.

Improved Material Handling Methods

Elwell-Parker Electric Lift Trucks Enable Bay Cities Transportation Company to Give More Efficient and Dependable Freight Service

SOMETIME back the Bay Cities Transportation Company, transporting freight from San Francisco to Oakland, across San Francisco Bay, began to improve its methods of handling freight at terminals and to acquire machinery to replace the hand truck and ramp methods that are so wasteful of time and so hard on package goods in transit. As a result of the preliminary study, several Elwell-Parker lift trucks of two tons capacity were purchased and the original fleet has now been increased to eight trucks.

The Bay Cities Transportation Company operates



Close-up of the barge St. Helena at the dock showing details of Colby-Barlow marine elevator with an Elwell-Parker loaded truck running off elevator platform to wharf.

nine barges and three tugs. Three of these barges have been especially equipped to work to best advantage with the electric trucks in loading and unloading at piers where berthing is limited. This has been accomplished by installing on each of these barges a 5-ton Colby-Barlow marine elevator operated by a Fordson tractor engine. The spacious platform of this elevator receives the loaded trucks from the pier at any stage of the tide and lowers them to the barge house floor level. In unloading the reverse operation is used.



Elwell-Parker electric lift truck spotting loaded platforms in warehouse



The barge Iroquois under tow

It is the testimony of the Bay Cities Transportation Company that this combination of elevator and electric truck enables them to make three transbay trips with a barge where formerly only one round trip was possible. With the elevator located forward of the house it is possible to nose the barge in between two ocean steamers berthed at the pier and bridge across from the elevator frame to pier side. Thus barge loads can be unloaded at ship's side direct and ship's freight loaded on barge direct and at the same time freight handled off and on pier or barge. This saves much stand-by waiting for ship or tide.

One Elwell-Parker 2-ton electric lift truck and driver on an average easily does the work of seven hand trucks and their operators. This saving in direct operating cost alone more than justifies the investment in these trucks.

There are, however, indirect savings of many kinds which further multiply the benefits derived from this modern method of handling cargoes.

Breakage claims are reduced to a minimum.

Better working conditions for stevedores make for better output per man.

The whole schedule is speeded up and all equipment is kept on a productive basis for a greater proportion of operating time, thus greatly improving the investment position of operating corporation.

The design and construction of Elwell-Parker lift trucks has been carefully worked out by expert engineers to give the very best combination of maneuverability, rugged strength, and over-all economy of operation. These trucks are manufactured in a large variety



Bay Cities Transportation Company barge Fruto snubbed in to pier between two ocean freighters with bridge from pier to elevator platform.



Barge Iroquois under tow.

of types, in which choice may be made to obtain the unit best adapted for any ordinary commercial application. Where a problem is so special that it is not cov-

ered by the standard range of types, the Elwell-Parker organization can usually combine features of several types to evolve a unit adapted to that problem or can make suggestions leading to a satisfactory solution.

The Bay Cities Transportation Company is only one out of many marine users whose terminal problems have been greatly simplified by the use of electric lift trucks. These clean, efficient, economical carriers are invaluable aids in the handling of general cargo on piers and in warehouses.

The Elwell-Parker Company builds these trucks in a modern manufacturing plant at Cleveland.

Ohio. Ira G. Perin, 200 Davis Street, San Francisco, represents the Elwell-Parker Company as distributor for California. Mr. Perin has been able to solve a large number of industrial and marine terminal transportation problems in a manner very satisfactory to executives and profitable to stockholders. The experience of Mr. Perin and the expert technical advice of the Elwell-Parker staff are open to all Pacific Coast operators.



The above picture is the artist's conception of the liner recently ordered from the Newport News Shipbuilding Company for the California New York service of the Panama-Pacific line. This ship, will be delivered early in 1927. She will, when finished, be one of the finest products that has ever come from an American shipyard, and she will symbolize the high standard that is being set for Pacific coastwise passenger accommodations. Undoubtedly this vessel will be followed by two more similar lines for the same service.

Marine Insurance

Developments of the Month

By CHARLES F. HOWELL, Contributing Editor

READ your trade paper with religious care. There is never an issue but has material that has cost its editors a great deal of forethought and planning, and it is just this material which often proves of inestimable importance when efficiently used by the reader. A month or so ago we described the forlorn state of the very important and only pier at Maracaibo, Venezuela, and told of the vain efforts made by merchants, shippers, and carriers to induce the Venezuelan Government, which owns the pier, to repair the dilapidated structure. In view of the enormous coffee export trade at certain seasons, this solitary pier had become an object of international solicitude. What has just transpired in that connection illustrates the force of the opening words of this paragraph—read your trade paper carefully.

This is what happened. An insurance paper published a story on the Maracaibo pier, setting forth how the merchants at that point built and operated it, how the Government took it from them on a technicality, and has since neglected to keep it in repair until carriers have, for a year past, been noting in their bills of lading that they disclaimed liability for damage to shipments due to the condition of the pier, thus putting an unfair burden upon the shoulders of the marine underwriters. As soon as the trade journal had supplied this information, a prominent marine underwriter of New York City sent to the steamship lines and checked up on the statements in the article, all of which were found to be entirely correct. At this underwriter's request the American Institute of Marine Underwriters brought the matter to the attention of the State Department at

SUMMARY

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Trading Warranties

Who Pays this Freight?

Read and Learn

Washington. The State Department transmitted the request to the American Legation at Caracas, which, in turn, got in touch with the Venezuelan Foreign Office. The latter gave the subject prompt consideration and advised our Minister at Caracas that the pier will be rebuilt without delay. This joyful intelligence was relayed through the State Department at Washington to the American Institute of Marine Underwriters, with the consequence of vast rejoicing on the part of maritime interests of the coffee trade in all parts of the world.

But it was an article in a trade journal that started the whole movement.

Lakeland Case Disagreement

Last month we gave in detail the unusually interesting story of how the steamer Lakeland, insured for \$350,000, went down off Sturgeon

Bay, Wisconsin, under circumstances that aroused the suspicions of the marine underwriters; and how elaborate and expensive diving operations were carried out, with numerous new and effective devices, for the purpose of examining the wreck where it lay in two hundred feet of water, and establishing evidence that the seacocks and bilge suction had been left open. The divers got the evidence.

Since our last issue the case came to trial before Federal Judge Paul Jones and a jury at Cleveland, Ohio. The owners sued to recover the \$350,000 of insurance money. The plaintiffs based their case upon an alleged accident to the steamer while she was in a turning basin just before going out to sea. They said that some obstruction on the bottom of the basin had punctured the hull. The defense put numerous experts on the stand to prove that examinations showed that there was nothing harder on the bottom of the basin than two or three feet of soft mud. Then the divers testified as to what they found in the wreck itself. The jury was out for four days, and finally brought in a disagreement, standing at six to six. This is regarded by the underwriters as a virtual victory, as it prevents recovery of the \$350,000 of insurance until further action is taken, if such ever is.

Heavy Sea Disasters

It has been a hard time for marine underwriters this fall. Wrecks and casualties have followed fast upon the severe weather that has been experienced along the United States Atlantic coast. One of the worst disasters was that which destroyed the Clyde liner Comanche. She took fire off the

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Florida coast and became a total loss. There was insurance on her hull in the sum of \$400,000, and an additional \$100,000 on disbursements. The American Marine Insurance Syndicates carries a 25 per cent interest in this coverage, the remainder being placed in London. The cargo insurance is roughly estimated at \$50,000, all of which was written by American underwriters.

Insurance men are predicting that the A.G.W.I. line will come in for a substantial advance in rate when its fleet comes up for renewal, the Clyde Line having had three total losses this year, the Mohawk, the Mohican, and the Comanche, and the Ward Line having had two in the last eighteen months, the Santiago and the Esperanza.

A few days after the loss of the Comanche, the British steamer City of Lahore was almost destroyed by fire and water while at a Staten Island pier, with a loss estimated at \$2,000,000. She had reached this country in safety after a long voyage from the other side of the world, with a valuable cargo of burlaps, jute, tea, and other merchandise from Calcutta and the Far East. The insurance loss will fall heavily upon the American underwriters.

Then the Ignazio Florio, owned by one of the best lines in all Italy, went down in mid-ocean, after she had sustained rudder damage at the hands of tremendous seas and her cargo of grain had promptly shifted. She had sailed for England from Philadelphia, with a stop at Montreal, with a cargo of 224,000 bushels of wheat, 67,562 bushels of barley, and 9411 bushels of oats. The insurance on her cargo exceeded \$500,000 and most of it was written in this country. It was the heroic rescue of her en-

tire crew, under almost impossible conditions, that won such worldwide praise for Captain Paul C. Greening of the President Harding.

The Norwegian freighter Elven undertook to salvage the wreck of the Florio, but came to grief in the heavy seas and went to the bottom herself after her crew had been rescued by the American steamer American Trader.

These are only outstanding instances of the terrible toll the Atlantic has recently taken, minor casualties being reckoned by the score.

Large Specie Shipments

Taken by and with, there has always been a good profit for underwriters in the insurance of specie in transportation. Notable exceptions were the loss of the Ward liner Merida a year or so ago with a million or two in precious metals, and, somewhat further back, the sinking of the Egypt, in Far Eastern waters with a loss in specie that set London Lloyd's back to the tune of about \$5,000,000. The chief hazard lies in a total loss.

During the early fall of this year there have been numerous large shipments of gold from England, totalling in the neighborhood of \$20,000,000. A considerable part of it was transshipped at New York and sent on to Canada by rail. The shipments were written all risks, office to office. For vessels of the class of the Mauretania the insurance rate is about 4½ cents per \$100. The rail shipments to Canada have been at 2 cents.

Miami Problems

As was to have been expected, the tremendous land boom at Miami has led to unusual conditions which have had to be care-

fully considered by underwriters. Embargoes on all freight except food materials have been general. When the Post Office Department announced that all mail notices of arrivals of freight at that point, not bearing street addresses, would be returned to the senders, several Atlantic steamship lines promptly published announcements in the daily papers that they would not accept freight, car loads or less than car loads, destined for Miami from local shippers or connecting lines unless street address of consignee be given and less than car load shipments be so marked.

Hotel accommodations at Miami can by no means take care of the crowds, and it has occurred to mettlesome shipowners that here was a good way to make some money out of their vessels during the unproductive winter season. They have been asking underwriters to insure their boats as floating hotels at Miami. In one instance as much as \$450,000 was wanted. But there have been few takers. The underwriters see a bad fire hazard, among other objections, and are keeping off.

Important Federal Decisions

What the United States courts say is final, in this country, and it is well for shipowners and ship operators to read the following decisions handed down in the case of the Turret Crown, 297 Federal Reporter, 766:

The insurer is subrogated to the rights of the shipper against the carrier, in the absence of anything to the contrary in the bill of lading; but, ordinarily, if the bill of lading gives the carrier the benefit of the shipper's insurance, the insurer is not subrogated. In case a policy is void by agreement if the insured covenants to give the benefit of his insurance to the car-

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rier, the insurers can require the insured to sue the carrier first, and can decline to indemnify him until the carrier's liability is determined.

If there is no stipulation to the contrary, a ship owner absolutely warrants that his ship is seaworthy in all respects, and not merely that he has used due diligence to make her seaworthy, regardless of his knowledge or ignorance, care or negligence.

The mere fact that a vessel encounters heavy weather is no defense to claims for damages to cargo if any defect or unseaworthy condition of the ship existed.

In event of its becoming necessary for the safety of a ship, or her crew or cargo, to seek a port for repairs, no such deviation has been made as would deprive the vessel of the benefit of the protective provisions of the bills of lading—deviation being a voluntary departure, without necessity or any reasonable cause, from the regular or usual course of trade.

Freight Insurance

It is conceded by the most competent authorities that the most difficult form of marine insurance is presented by the coverage of freight. The problem is complicated through a confusion of terms; the word "freight" having a double meaning in this country. To the lay mind "freight" means goods to be transported; but in marine insurance "freight" means the money paid to a vessel for the carriage of goods, or to any common carrier for the transportation of property by rail or water. It is an intangible interest, which adds to the difficulty of understanding the subject. Forms of contract differ widely, as do the times for the payment of the freight money. Only by a careful perusal of the bill of lading or charter party can it be

determined who has the insurable interest in freight. In some instances freight is prepaid absolutely, and if the goods are lost their owner also loses the freight which he has paid. In such a case he can insure the freight. Similarly, where the freight, although not prepaid, is "guaranteed vessel lost or not lost," if the goods are lost or damaged the cargo owner must nevertheless pay the freight. In instances such as these, the amount of the freight paid or to be paid is usually added to the cost of the goods and insured as cargo.

But if the goods are shipped "freight payable at destination on the right delivery of the cargo," then the freight is at the risk of the shipowner and may be insured by him. There are other varieties in the methods of paying the freight, which complicate the problem; but the three ways above alluded to are the more common.

Collision Clause

There is included in almost every hull policy what is commonly described as the "collision clause." In reality it is a separate liability insurance. It does not relate to damage incurred by collision, as this arises from a peril of the sea and is covered in the perils clause. The protection furnished by the "collision clause" covers the legal liability of the owner of the insured vessel for damage done by his vessel to another vessel through collision. In earlier times it was customary to insure only three-fourths of this collision liability, the idea being that this would increase the care of the vessel owner. But this moral effect was lost when the owners formed "clubs" and insured the other one-quarter liability in mutual protection organizations. It is now customary, in the case of mechanically

propelled vessels, to insure the whole collision liability risk. Then there are certain other legal liabilities with respect to cargo, crew and passengers, and these the owners got accustomed to insuring in their clubs. The result has been that competition with these clubs has led the underwriters to sometimes incorporate in their hull policies what are known as "protection and indemnity" clauses which cover these additional liabilities as well.

Trading Warranties Clause

In practically all hull policies there is a clause describing the limits within which the vessel may navigate, much as in the case of cargo policies there is always a clause describing the geographical limits within which the policy is operative. This hull clause is known as the "trading warranties" clause. There is a great dissimilarity in the build of vessels, predicated upon the trades in which they are to operate. Some are to navigate inland waters only; some coastwise; some for ocean use. A double purpose is served by the "trading warranties." First, they confine the vessel to trade for which it is physically adapted; and, secondly, they restrict the vessel as closely as possible to the waters which it will probably navigate during the term of the policy, in order to keep down the premium rate. It is usual for underwriters to grant a lower rate on a vessel closely confined as to trade, as compared with one allowed by the policy to do business on a worldwide basis.

Laid Up Twenty-Two Years

Probably the record for a long lay-up goes to the Italian bark Maria Madre, which has been rotting in the waters of Uruguay

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while the lawyers argued over her legal status. In April, 1902, she was chartered to load a cargo of salted hides at Paysandu, Uruguay, for delivery at Antwerp. The loading was completed in July of that

year, but she was not allowed to sail because a dispute developed over the freight money. An interminable series of legal and diplomatic complications ensued which were not ended until September, 1924, when the High Court of

Montevideo upheld previous decisions and rejected the owners' appeals. All this time the bark has been sagging at anchor, a dilapidated hulk, with her gear, upper masts, and boats rotted away and her seams gaping wide open.

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Fixtures, Charters, Sales

November 20, 1925.

THE Japanese stmr. Washington Maru is reported fixed grain from British Columbia to United Kingdom/Continent, Nov. loading, by Strauss & Co.

For grain to the Orient, the following fixtures are reported: Japanese stmr. Goshu Maru, Japan, grain and lumber, Oct./Nov., Suzuki & Co., British stmr. Cornish City, Shanghai, Nov.; Japanese stmr. Toyohiko Maru, Japan, grain and lumber, Nov., Suzuki & Co.; Japanese stmr. Glasgow Maru, Japan, Nov., Mitsubishi Co.; British stmr. Paris City, Shanghai, \$5, Nov., Norwegian stmr. Storviken, Feb. Belfour Guthrie & Co.; British stmr. Haleric, Dec./Jan., Balfour Guthrie & Co.; Japanese stmr. Kinryo Maru, Feb. loading; Japanese stmr. Ypres Maru, Suzuki & Co.

The following fixtures are reported for lumber from the North Pacific to Australia: British stmr. Buchanness, Jan., W. L. Comyn & Co.; Japanese stmr. Asama Maru, Dec. J. J. Moore & Co.; British stmr. Knockfierna, \$14, same; Japanese stmr. Yoko Maru, Nov./Dec. same charterers; British stmr. Welsh City, \$14, Dec., same charterers; British stmr. Cowden Law, Dec., Balfour Guthrie & Co., \$13.75.

The following steamers are reported fixed with lumber to the Orient: Japanese stmr. Roxan Maru, Oct., Nakagawa & Co.; British stmr. City of Victoria, Nov., W. L. Comyn & Co.; Japanese stmr. Koshin Maru, Nov., same charterers; British stmr. Aymeric, Nov., Pacific Export Lumber Co.; Japanese stmr. Malta Maru, Nov., Nakagawa & Co.; British stmr. Luceric, \$11.50, Dec., Yamashita Co.; British stmr. Artemisia, Dec., Balfour Guthrie & Co.; Japanese stmr. Koshin Maru, \$5.00, Jan., East Asiatic Co.; Japanese stmr. Shunsho Maru, Nov., Kanematsu Co.; British stmr. Kumeric, \$11.50, Nov./Dec., Yamashita Co.

For lumber to the Atlantic Seaboard, the following fixtures are reported: American stmr. J. R. Gordon, Dec., Krauss Brothers Lumber Co.; American stmr. Orinoco, two ports North Hatteras, Dec., Henry

D. Davis Lumber Co.; American m.s. Frank Lynch, Miami, \$18, Dec.; American stmr. Samoa, same \$18, Nov.; American schr. Alvena, Florida, \$20, Nettleton Lumber Co.; American m.s. Donna Lane, Key West, same charterers; American stmr. El Capitan, Florida, Chas. R. McCormick Lumber Co.; American schr. Rose Mahony, Florida, \$19, Nettleton Lumber Co.; American stmr. Santa Inez, Florida, \$19.50, same charterers; American stmr. H. W. Baxter, Florida, Nov./Dec., Chas. R. McCormick Lumber Co.; American schr. Irene, \$20, Miami, Nettleton Lumber Co.

The following steamers are reported taken on time charter. British stmr. Argalia, delivery North Pacific, redelivery Australia, 4/3, H. R. MacMillan Export Co.; British stmr. Castlemoor, Puget Sound to Australia, J. J. Moore & Co., Inc.; American m.s. Mazatlan, San Francisco to South Sea Islands, merchandise, N. H. Hickman; American str. Dorothy Alexander, New York to Jacksonville, Clyde Steamship Co.

The following tanker fixtures are reported: French stmr. Ophelie, California to French Atlantic port, 27/6, Nov., refined and/or spirits; American tkr. Shenandoah, California to North of Hatteras, 65c, Nov., gasoline; American tanker Sunbeam, California to North of Hatteras, 53c, prompt, dirty; American tanker Sunoil, same, 55c, Nov.; American tanker Paulsboro, same; American stmr. Antietam, same; Panama American boat, same; American stmr. Miller County, same, 54c, gas oil; American stmr. Agwi —, same, 62c, fuel oil.

The following sales are reported: American schr. W. F. Jewett, Gardiner Mill Co. to Capt. A. C. Wilvers; American schr. W. H. Hall (renamed Dante), Geo. E. Billings to Peruvian parties; American schr. Camano, G. H. Seaborn to Mobile parties; American stmrs. Lake Superior, Lake Carreles, Lake Coquina, and Lake Corsicon, U.S. Shipping Board to Pillsbury and Curtis; American stmrs. Heffron and Hegira, U. S. Shipping Board to Weyerhaeuser Lumber Co.; Am-

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erican gas schr. Herman, H. Leibes & Co. to Mexican parties; American schrs. Alvena and Irene, Gardiner Mill Co. to A. C. Wilvers and C. A. McCarthy; American schr. Ecola, Capt. R. Peterson to Shanghai Building Co, Shanghai; American stmrs. West Jena and West Jessup, Shipping Board to Columbia Pacific Shipping Co., \$200,000 each; American stmr. Indiana Harbor, Shipping Board to Pillsbury & Curtis of San Francisco; U. S. N. stmr. Newport News, U. S. Navy Dept. to Alaska Packers' Association.

PAGE BROTHERS, Brokers.

American Shipbuilding

Continued from page 7

Shipbuilding Prospects For American Yards

THE volume of contracts for ship construction in American yards during the past thirty or sixty days should certainly bring a small ray of encouragement to American shipbuilders who have been watching the steadily decreasing volume of shipbuilding since the war. The definite announcement that the International Mercantile Marine Company plans to build three 60-foot vessels for the New York-California trade and the actual placing of the order for the first of these with the Newport News Shipbuilding and Drydock Company holds great promise for the future. Operators of American intercoastal and coastwise trade are coming to realize the necessity of bringing their fleets up to a par with the trans-Atlantic liners as far as equipment and service are concerned, and the recent orders placed for new coastwise vessels for the Atlantic Coast are indications of the trend of the times and the prospect of further orders.

The Department of Commerce on October 31 reports that on October 1, 1925, American shipyards were building or under contract to build for private shipowners 155 steel vessels of 153,010 gross tons compared with 140 steel vessels of 148,127 gross tons on September 1, 1925. There were 21 wood vessels of 8577 gross tons building or under contract to build for private shipowners during the same period compared with 12 wood vessels of 7555 gross tons on September 1, 1925.

New Type Shallow Draft Towboat

THE Nashville Bridge Company, Nashville, Tennessee, recently launched the towboat Nashville B, which was designed and is being built by this company at their own expense for the purpose of demonstrating the reliability, economy, and efficiency of this type of towboat for river service. The Nashville Bridge Company deserve great credit for the missionary work they are doing along this line, and the trials of the towboat when completed ought to be of great interest to builders and operators of river craft.

After consideration of the vari-

ous requirements of a towboat which could reliably operate in shallow water and close or congested areas, it was finally decided to employ a stern paddle wheel and two independently operated direct reversible diesel engines. Following is a brief description of the chief characteristics:

This boat has an over-all length of 111 feet and a width over-all of 30 feet. The hull is of steel with a well modeled bow, which prevents, to a large extent, drift from going under the boat where there is danger of it lodging in the rudders. Her 20 feet of easy stern rake with transom well above the water, together with well rounded bilged and flared sides, gives her exceptional ability to back and maneuver. Her draft is only 3 feet, enabling operation in very shallow waters. Her two wheels are each 15 feet 4 inches in diameter with 13 buckets 30 inches deep and 9 feet 3 inches long, and turn 23 R.P.M. The boat will be propelled by two 200 horsepower Worthington full diesel, direct reversible, 2-cycle, solid injection marine engines. Her fuel capacity will enable her to operate for more than a month without stopping for fuel. The cost, completely equipped, will be approximately \$120,000.

Bids Opened on Philippines Steamer

Bids were opened on October 30 by A. W. Lawson, naval architect of San Francisco, for construction of a passenger and freight steamer for Ynchausti & Co. of Manila, Philippine Islands. Seven bids were submitted by various American yards, but contract has not yet been placed. It is reported that additional bids may be asked by Ynchausti & Co. from European yards.

The vessel is to be 260 feet over-all, 40 feet molded beam, 20 feet molded depth, of 2975 tons displacement and 1200 tons deadweight cargo capacity. Plans and full descriptions were published in the November issue of Pacific Marine Review.

The shipbuilding companies submitting bids for the construction of this steamer were: Bethlehem Shipbuilding Corporation, Union Plant, San Francisco, and Harlan Plant, Wilmington, Delaware; Moore Dry Dock Company, Oakland; Los Angeles Shipbuilding & Drydock Corp.; Newport News Shipbuilding & Drydock Co.; Sun Shipbuilding & Drydock Company; and Federal Shipbuilding and Drydock Company.



The motor tank barge General was launched by the Bethlehem Shipbuilding Corporation on October 28. She was built for the General Petroleum Corporation and is engined with two 250-horsepower Atlas-Imperial diesel engines.

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Orders for Golden Gate Ferryboats

AN order has been placed by the Golden Gate Ferry Company, San Francisco, with the General Engineering and Drydock Company of San Francisco and Alameda, for the construction of three automobile and passenger ferries. The boats will be built of Douglas fir, double-ended, 240 feet length over-all, 44 feet molded breadth, and 6 feet molded depth. They will be propelled by diesel-electric power.

Three 400-horsepower diesel engines, to be manufactured by the Pacific Diesel Engine Company, Oakland, will be installed in each boat, each directly connected to a 270-kilowatt Westinghouse Electric and Manufacturing Company's generator.

The contract has been placed with the provision of the favorable

action of the California State Railroad Commission in granting the application of the Golden Gate Ferry Company to operate automobile and passenger ferry service between San Francisco and Berkeley.

Construction of the three ferries will not be started until such time as this permission is granted. The ferry company, however, has ordered work to start on one boat and the Pacific Diesel Engine Company has started work on the machinery for one.

The cost of each boat will be \$175,750 each for the hulls, \$83,333.33 for the diesel engine installation, and \$47,700 for the Westinghouse auxiliary equipment. The ferryboats will be built in accordance with the requirements of the American Bureau rules for 1921.

terior Argentine rivers will be opened February 24, 1926. The dredge is to cost approximately \$200,000. American manufacturers interested in participating in this tender should communicate with their representatives in Buenos Aires, since local representation is necessary.

The Atchison, Topeka, and Santa Fe Railroad, San Francisco, has asked for bids for the construction of a steel carfloat for San Francisco Bay service, 260 feet long, 38 feet wide, 12 feet deep.

Lester Stone of W. F. Stone & Son, Shipbuilders, Oakland, California, also a yachtsman of considerable note, announced recently that he will build a small size power cruiser which will be designed for possible quantity production if the boat meets with favor by Pacific Coast boatmen. The boat will be about 36 feet long, will be fitted with sleeping accommodations for four to six persons, and will be powered with either Scripps or Kermath 6-cylinder gas engines of 50 to 60 horsepower. Keel has not yet been laid.

New Vessel for Eastern Steamship Lines

(Continued from Page 7)

mechanical ventilating system, heating system, complete ballast and drainage system, telegraph, telephone, and call systems.

The vessel will be built under special survey to Lloyd's Register of Shipping to Class 100-A-1, and also to meet all requirements of the British Board of Trade Inspection Service Rules.

Work in Prospect

Large Theatre-Ferryboat for Puget Sound

Joshua Green, pres. of the Puget Sound Navigation Co., Seattle, Wn., has instructed Lee & Brinton, Seattle naval architects, to draw up plans and specifications for a large ferryboat, which will be equipped as a moving picture theatre.

The ferryboat will be 200 feet long, 48 feet beam, and will probably be built of steel. She will have a seating capacity in the theatre of 1000 persons, a total passenger capacity of 1500. She will be powered with a 900-horsepower Sumner diesel engine, which has already been ordered. Her speed will be 13½ knots.

Bids for the construction of a steel ferryboat will be asked about December 10. If they are too high a wooden boat may be built instead. The ferryboat, besides being unique in its ability to do duty

as a ferry and theater, will exceed in attractiveness and accommodations any vessel of her type on the Coast. She will cost about \$300,000.

Word has been received from the Constructor of the U. S. Coast Guard, Washington, D. C., that plans and specifications for the construction of the Coast Guard Cutter No. 44 (otherwise called the New Bear) will be ready about the first of December. Proposals for the construction of the engines for this cutter were received by the Coast Guard last June, but the order has not yet been awarded. The propulsion equipment is to consist of two 6-cylinder vertical diesel engines of 600 horsepower each. These will drive direct current generators and exciters.

Reports are current on the Atlantic Coast that the Ward Line, operating in the New York-Havana-Mexico trade, is planning the construction of a passenger vessel for its New York-Maracaibo service of about 7500 gross tons.

The Department of Public Works of the State of New York is planning the construction of six gasoline towboats for the New York Barge Canal. They are to be of steel, 40 feet long, 10 feet wide, 5 feet molded depth. The engines are to be 4-cylinder heavy duty marine type.

Bids for a suction dredge for in-

Recent Contracts

The Los Angeles Shipbuilding & Drydock Company has a contract for a double-ended tow barge for the Standard Oil Company. The barge will be 131 feet long, 40 feet beam, and 11 feet 6 inches depth; capacity 7000 barrels of oil.

Supple & Martin Shipyard, Portland, Oregon, has laid keel for a towboat 65 feet long, 14 feet beam, to be powered with a 125-horsepower Fairbanks-Morse diesel engine. The tug will be equipped with apparatus for fire fighting and for wrecking purposes.

Lake Washington Shipyards, Kirkland, Wn., are building for stock three purse seiners, 65 feet between perpendiculars, 15 feet beam, and 6 loaded draft; a cruiser 39 feet long. Keels have been laid, but the type of engines have not been determined.

Charleston Drydock & Machinery Co., Charleston, S. C., has several orders, including a small freight boat and a lighter for Daytona, Fla., owners; snagboat for U. S. Army Engineers, Montgomery, Ala.; a lighter for Sanford & Brooks; and a ferryboat for the Charleston Ferry Commission.

Wm. Cramp & Sons Ship & Engine Building Co. have an order for a twin-screw passenger and freight steamer for the Eastern Steamship Lines, 378 feet long 55 feet



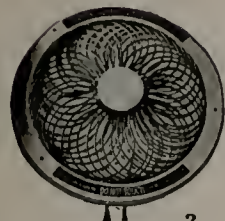
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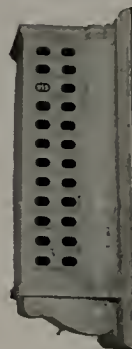
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11

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2. Cory-Aero Automatic Fire Alarm System embodies the finest known scientific principles and is the most sensitive detecting system that is available. (Bulletin No. 0-29-B)
3. Anti-noise Coryphone transmission is made exceptionally clear by use of the Magnavox Patented extraneous noise eliminating diaphragm. There is a Coryphone for every Navigating Control or Ship Service requirement. (Bulletin No. 50-A)
4. One of the many ruggedly built steam and watertight electric fixtures suitable for all classes of vessel. Cory Decorative Fixtures are unsurpassed in quality and appointment. (Bulletins 75-29-A and 74-29-A respectively)
5. Self-synchronous Electrical Telegraph for Engine Order, Steering, Docking. The superior telegraph for long leads. (Bulletin No. 85-29-A)
6. Specification switchboards for every distribution requirement built with that extra quality and workmanship so highly appreciated in marine service. (Bulletin No. 0-29-B)
7. Shaft Direction and Revolution Indicator with Counter housed in a watertight case indicates R.P.M. and direction of engines. (Bulletin No. 11-29-B)
8. Cory Electro-mechanical whistle valve action is positive and instantaneous. Automatic and manual controls provide for every requirement of Rules and Regulations. (Bulletin No. 13-29-B)
9. The artistic Stewards' Call Annunciator that adds grace to the corridor or passageway is but one of the many types of annunciators that has made Cory Annunciators superior. Of course Corybells buzzers and accessories are stored. (Bulletin No. 0-25-B)
10. Ramsey Emergency and Anticipating Governors for Reciprocating and Diesel Engines successfully and completely control engine racing. (Bulletins Nos. 32-29-B and 34-29-A)
11. Cory American Standard Mechanical Telegraph Transmitters for all purposes where a telegraph is required, such as Engine Order, Steering, Docking, Etc. (Bulletin No. 85-29-A.)

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6 inches beam, 29 feet 6 inches depth; 1040 D.W.T 5890 tons displacement; 7500 SHP; 2 Parsons' turbines with reduction gears, 6 single-ended Scotch boilers; also order for five steel dump scows for the American Dredging Co.

Defoe Boat & Motor Works, Bay City, Mich., will build three wooden yachts, 55 ft. between perpendiculars, 13 ft. beam, 3 ft. 9 in. draft; gas engines of 140 I.H.P. developing 13 miles speed, for Geo. M. Kelley of Detroit, T. V. Van Dorn of Cleveland, and Hacker & Ferman of Detroit. Keels will be laid in December.

Dravo Contracting Co. has an order for a sand digger from the Keystone Sand & Supply Co., Pittsburgh; and for 2 steel oil barges for another party.

Newport News Shipbuilding & Drydock Co. has order from International Mercantile Marine Co. for combination turbo-electric vessel, 600 feet long, 80 feet breadth, 22,000 gross tons. See full description on another page of this issue.

Keel Layings

Dredge hull for Ellicott Machine Corp. by Bethlehem Shipbuilding Corp., Baltimore, Nov. 17.

Steel patrol boat for U. S. Coast Guard by Defoe Boat & Motor Works, Nov. 1.

Willetts Point, seagoing diesel-electric hopper dredge for U. S. Army Engineers by Federal Shipbuilding & Drydock Co., Nov. 10.

Steel tug for Canadian Dredging Co., Midland, Ont., by Midland Shipbuilding Co., Ltd., Sept. 11.

Two diesel-electric towboats for U. S. Engineers by Nashville Bridge Co., Oct. 10 and 15; deck barge Oct. 10; two towboats for stock, Oct. 10.

Launchings

General, diesel-electric tank barge for General Petroleum Corp.

by Bethlehem Shipbuilding Corp., Oct. 28.

Dredge hull for Ellicott Machine Corp. by Bethlehem Shipbuilding Corp., Baltimore, Oct. 14.

Fireboat for City of Houston, by Bethlehem Shipbuilding Corp., Wilmington, Del., Oct. 5.

Nashville B., diesel towboat, by Nashville Bridge Co., Oct. 27; deck barge, Oct. 7.

Mohawk, combination steamer for Clyde Steamship Co., by Newport News Shipbuilding & Drydock Co., Oct. 21; two harbor tugboats for Pennsylvania R. R., Oct. 31.

Deliveries

L.A. City No. 2, fireboat to Los Angeles Harbor Commission by Los Angeles Shipbuilding & Drydock Corp., Nov. 1.

Georgia, towboat, to U. S. Engineering Dept. by Charleston Dry Dock & Machinery Co., Nov. 1.

Three steel vessels to U. S. Coast Guard by Defoe Boat and Motor Works, Nov. 1.

Chamberlin, steamboat hull, by Nashville Bridge Co., Oct. 5.

Two carfloats to Pennsylvania R. R. by Sun Shipbuilding Co., Nov. 6.

Ship and Boat Building is the title of a report recently issued by the Bureau of the Census, Department of Commerce. This booklet is published under the series "Census of Manufacturers, 1923," and gives a description of the industry in the United States; value of products; tonnage, gross, net, and displacement; and statistics for previous years, namely, 1916, 1919, and 1921. Statistics are tabulated and report on the number of ship and boat building establishments and number of persons employed; vessels launched and distributed according to material and kind of power, by number and gross tonnage.

W. C. CUMMINGS, President

GEO. RODGERS, Sec'y-Treas.

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Repair Awards

Bethlehem Shipbuilding Corp., San Francisco, has been awarded the contract to repair the Anglo-Saxon Petroleum Co.'s tanker Ampullaria, which grounded off the California Coast near San Francisco. The work consists of renewing and repairing 90 plates on the bottom of the steamer and extensive interior repairs, and will require 58 days. This is the largest repair job done at a San Francisco yard for several years.

Moore Dry Dock Company, Oakland, repaired the Standard Oil tanker F. H. Hillman recently on a bid of \$4932.

Wallace Shipyards, Vancouver, British Columbia, were awarded

contract recently for damage repairs to the Holland-America steamer Eemdyk, which went aground on Bentinck Island. The company's bid was \$66,800 for the work, which consists of repairs to a broken stem, 20 plates to be replaced, and interior repairs.

Hanlon Dry Dock & Shipbuilding Co., Oakland, recently completed repairs to the motorship Lima, costing \$14,782.

Moore Dry Dock Company, Oakland, California, was one of the bidders for boilers in the new Long Beach steam plant. Turbines will be supplied by either Westinghouse or General Electric. The cost of both boilers and turbines will be about \$800,000.

Progress of Construction

Pacific Coast

BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT Potrero, Works

Purchasing Agent: O. W. Streett.
General, hull 5327, diesel-electric tank barge for General Petroleum Corp.; 170 L.B.P.; 32 beam; 11-6 loaded draft; 9 mi. loaded speed; 920 D.W.T. 2 Atlas-Imperial diesel engs., 250 B. H. P. ea; keel Aug. 24/25; launched Oct. 28/25; deliver Dec. 12/25.

J. C. JOHNSON'S SHIPYARD Port Blakely, Wn.

A. T. B. Co. No. 22, hull 44, barge for American Tow Boat Co., Seattle, 100 L.O.A.; 36 beam; 9-6 draft; keel Sept. 10/25; delivered Oct. 10/25.
A. T. B. Co., No. 23, hull 45, for American Tow Boat Co., Seattle; same as above; delivered Oct. 28/25.

A. T. B. Co. No. 14, hull 46, barge for Anderson Towboat Co., Seattle; 110 L.O.A.; 36 beam; 11-4 draft; delivered Oct. 14/25.

No name, hull 47, cannery tender for P. E. Harris & Co., Seattle; 85 long x 18 6 draft x 10 depth; keel Nov. 9/25.

Hull 48, gravel dump scow for State Gravel Co.; 80 x 90 x 9 feet.

Hull 49, fish carrier boat for P. E. Harris & Co.; 36 ft. long; keel Nov. 16/25.

LAKE WASHINGTON SHIPYARDS Kirkland, Wash.

Purchasing Agent: A. R. Van Sant.
No name, purse seiner, for stock, 65 L.B.P.; 15 beam; 8 loaded draft; engs. not determined; keel Oct. 28/25.

No name, purse seiner, same as above; keel Oct. 28/25.

No name, purse seiner, same as above; keel Oct. 28/25.

Cruiser, for stock, 39 L.B.P.; 8-6 beam; keel Oct. 28/25.

LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION San Pedro, Calif.

Purchasing Agent: L. A. Hanson.
L. A. City No. 2, hull 47, straight stem and elliptical stern, one deck, fireboat for Los Angeles Fire Department; 93 ft 4 in LBP; 19 ft beam; 6 ft 6 in loaded draft; 17 mi speed; 900 SHP Winton gas engs; keel June 26/25; launched Oct. 20/25; delivered Nov. 1/25.

NAVY YARD Puget Sound

Holland, submarine tender for government; 460

LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng. 7000 IHP; two WT express type boilers; 10,000 tons disp; keel April 11/21 deliver April 1/26, est.

Atlantic, Lakes, Rivers

AMERICAN BRIDGE COMPANY

Pittsburgh, Penn.

Purchasing Agent: W. G. A. Millar.
Thirty barges for the Ohio River Co.; 175x26x11;

18 delivered;

Twelve barges, Crucible Steel Co., 175x26x11; deliver Jan 1/26, est.

Twelve barges, T. C. I. & Ry. Co., 140x25x9; deliver Jan/26, est.

One fueling scow for Ohio River Co., 90x26x8 feet.

THE AMERICAN SHIPBUILDING COMPANY

Cleveland, Ohio

W. H. Gerhauser, vice-president and director of purchases.

No name, hull, 791, bulk freighter, Pickands, Mather & Co., 580 L.B.P.; 60 beam; 20 loaded draft; 13 mi speed; 12,000 D.W.T.; 2200 IHP., trip. exp. engs.; 3 B. & W. boilers; keel Oct 10/25, est.

No name, hull 792, sister to above; keel Nov 10/25, est.

BETHLEHEM SHIPBUILDING CORPORATION, FORE RIVER PLANT

Quincy, Mass.

Lexington, hull 1300, airplane-carrier U.S.N., launched Oct. 3/25.

BETHLEHEM SHIPBUILDING CORP., LTD., BALTIMORE DRY DOCKS WORKS

Baltimore, Md.

Hull 6132, dredge hull, Ellicott Machine Corp., 160 feet long; 40 feet wide; launched Oct. 14/25.
Hull 6133, same as above; keel Nov. 17/25.

BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT

Wilmington, Del.

Stroudsbury, hull 3496, J. W. Sullivan Co., 93 ft 6 in LBP; 25 ft beam; 9 loaded draft; keel June 28/25; launched Sept. 19/25.
Newton, hull 3497, same as above; keel June 29/25.

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Int. Register

8 in depth. Winter engs: keel Jan /26, est

No name, hull 304, diesel yacht, 2 screw, for Galen L. Stone; 177 L.O.A.; 27 ft 6 in beam; 15 ft 8 in depth; Winton engs.; keel Mar/26, est.
No name, hull 305, diesel yacht, 2 screw, for E. S. Burke, Jr.; 132 L.O.A.; 24 beam; 13 ft 1 in depth; Winton engs.; keel May/26, est.

NEW YORK SHIPBUILDING CORP. Camden, N. J.

Purchasing Agent: L. G. Buckwalter.
No name, hull 304, diesel tanker; 480 ft. long; 9500 gro tons; 13,000 DWT; New York-Werks-poor engs. 3200 BHP; keel May/25; launch fall 1925, est.

Hull 312, dredge hull, 140 ft long, for Bney-sons Co.; keel Sept/25.

Hull No. 313, dredge hull for American Dredg-ing Co.; 135 long; keel Sept/25.

THE PUSEY & JONES CO. Wilmington, Del.

Purchasing Agent: James Bradford.
No name, hull 1030, single screw passenger and freight steamer for Baltimore & Philadelphia Steam-boat Co.; Philadelphia; 219 L.B.P.; 45 beam; 11 loaded draft; 14½ mi speed; 4 crank, TE engs. 21-32-35-35 by 24"; two B. & W. water-tube boilers; 3046 sq ft heating surface each.
No name, hull 1031, sister to above.

STATEN ISLAND SHIPBUILDING COMPANY

Staten Island, N. Y.

Purchasing agent: R. C. Miller.
No name, hull 757; ferryboat City of New York; 151 ft long; keel Feb/18/25.

No name, hull 758, sister to above; Keel Mar 27/25.

Albany, hull 756, ferryboat, New York Central R. R.; 210 ft. long; keel Dec 27/24; launched Sept. 8/25.

SUN SHIPBUILDING COMPANY

Chester, Penn.

Purchasing Agent: H. W. Scott.
Hull 85, carfloat, Pennsylvania Railroad; 358 LBP; 47 ft 4 in beam; 12 ft 6 in depth; keel July29/25; launch Nov30/25, est; deliver Dec 24/25, est.

Hull 86, sister to above; keel Aug1/25; launch Dec16/25, est; deliver Jan9/26, est.

Hull 87, carfloat, Pennsylvania R. R.; 250 LBP; 34 beam; 9 depth; keel July27/25, launch Nov 10/25, est.

Hull 88, sister to above, keel Aug3/25; launch Nov10/25, est.

Hull 89, carfloat; Pennsylvania R. R.; 145 LBP; 36 beam; 10 depth; keel Aug10/25; delivered Nov 6/25.

Hull 90, sister to above; keel Aug17/25; delivered Nov6/25.

Hull 91, carfloat, Pennsylvania R. R.; 230 LBP; 38 beam; 10 ft 6 in depth; keel Aug31/25; launch Dec 10/25, est.

Hull 92, carfloat, sister to above; keel Sept7/25; launch Dec10/25, est.

Wicomoco, Hull No. 93, tug, for Pennsylvania R. R.; 116x24x13-8; keel Sept14/25; deliver Nov 25/25, est.

TODD ENGINEERING, DRYDOCK & REPAIR CORP.

Brooklyn, N. Y.

John H. McCooley, hull No. 36, ferryboat, City of N. Y.; 148 L.B.P.; 53 beam; 9-9 load draft; keel Feb15/25, launch June 14/25.

THE CHARLES WARD ENGINEER- ING WORKS

Charleston, W. Va.

Purchasing Agent: E. T. Jones.
Geo. T. Price, hull 37, tunnel propeller towboat, Kelly Transportation Co.; 126 LBP; 26 beam; 5 loaded draft; 2 diesel engs. 360 BHP each; keel June17/25; launched Oct1/25; delivered Nov9/25.

No name, hull 38, sternwheel towboat, The Ohio River Co.; 145 LBP; 32 beam; 5 draft; recip 700 IHP engs; return tubular boilers, 42 in x 26 ft; keel Oct15/25, est.

No name, hull 39; steel barge, Kelly Axe & Tool Co.; 150 long, 26 beam; 8 draft.

No name, hull 40, sister to above.

No name, hull 41, sister to above.

No name, hull 42, sister to above.

No name, hull 43, sister to above.

No name, hull 44, sister to above.

No name, hull 45, sister to above.

No name, hull 46, sister to above.

No name, hull 47, sister to above.

Repairs

BETHLEHEM SHIPBUILDING CORPORATION, LTD.

Union Plant, San Francisco.

Convert to motorship: tanker Lio. Drydock, paint, misc. repairs: Daylight, Tennessee, J. A. Moffett, West Holbrook, Manoa, Maryland, Lubrico, H. M. Storey, S. O. Barge No. 3. Drydock, paint, engine, boiler, hull repairs: Calistoga, Martinez, Makura, Napa Valley, Indra, Chiapas. Engine, boiler, hull repairs: Walter A. Lucken-

bach, City of Sacramento, Dorothy Alexander, Jacob Luckenbach, W. F. Herrin, Tahiti and Pal-las (also steward's) George Washington. Main en-gine repairs: La Brea, George W. Barnes, Sachsen, Rose City. 1 steel tailshaft: Admiral Dewey. One new head for aux. engine: Loch Coil. Furnish three tail shafts: Los Alamos. Install Howden tube: Minnesotan. Misc. repairs: Yankee Arrow, West Faralon, Pilot, Olinda, Tulsagas, Nebraskan, Texan, Silverado, Hawk, Claremont, Port Saund-ers, Nushagak, Daisy Gadshy, San Diego, Jacox, Traveler, Willamette, Utacarbon, Missoula, Ryder Hanify, Java Arrow, Chuky, Finland, Panaman, Sveajarl, Coalanga, Hawaiian, Australian, Andrea, F. Luckenbach, Fred W. Weller, Kern, Levant Arrow, Minnesotan, Aden Devy, H. M. Storey, W. S. Rheem, Katrina Luckenbach, W. M. Irish, Texan, Tahiti, Mahukona, Chihuahua, Zenon, S.C.T. Dodd, Alaska, Enterprise, H. T. Harper, Missoula, Santa Paula, R. J. Hanna, Kozambe, K. I. Luckenbach, Tacoma, Alaska, President Pierce, Arizonan.

San Pedro Works

Drydocked and repaired: stmr. West Faralon, West Cajoot, Onaida, Olcum, schrs. Santiam, Skagway, tug Pilot, yacht Zahma, barge Gen. Pet. No. 1. Misc. repairs: stmr. Newport, Heffron, Missoula, Nordanger, A. C. Bedford, Viking, La Placencia, Cathwood, Watertown, Geo. W. Barnes, Chiapas, Chuky, Java Arrow, Pallas, Warwick, Hal-grim, Deroche, Homer, schrs. Noyo, Halco, launch Canadobta, tugs San Pedro, Restless, Sea Fox, M.C.S. Barge.

CHARLESTON DRY DOCK & MACHINERY COMPANY, Charleston, S. C.

Purchasing Agent: Charles R. Valk.
General repairs: stmr. Sundance, Lydonia, Her-mes, tugs Cecelia, Waban, Progress, a dredge, and 6 small yachts.

LAKE WASHINGTON SHIPYARDS, Seattle, Wash.

Remove old and install new boiler, sheathe hull with yellow metal: stmr. Washington. Rebuild government launch into yacht for Mr. Grimshaw. Recaulk, install new shaft, repair bulwarks: gas. s. Alco. Recaulk, new planking in hull; gas s. Nan B. Misc. repairs: ferry Leschi, gas s. Hayak, stmr. Dawn.

TODD DRY DOCKS, INC. Seattle, Wash.

Drydock and general repairs: President Grant, President McKinley, Drydock, elcan, paint, misc. r pairs: Redondo, Wheatland Montana, Edmore. Misc. repairs: Kulshan, Tacoma, Admiral Schley.

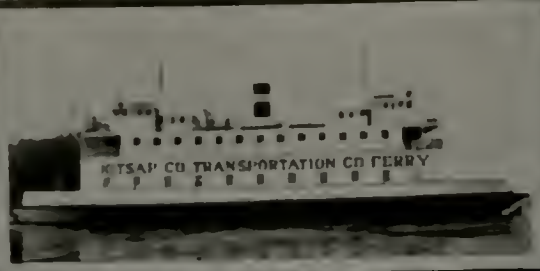
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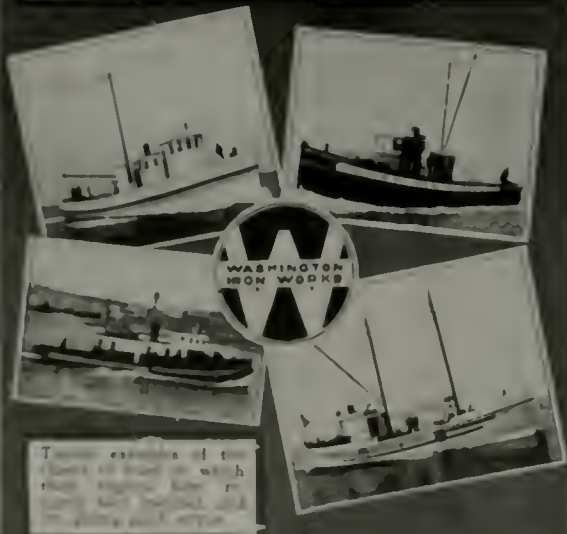
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*Powered with the Engine
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THE unusual care which attends every detail of manufacture of the Washington-Estep Diesel Engine insures a precision and dependability, of performance, which has won its foremost place among marine engines.

Such installations as those illustrated here are typical of the vessels which are being equipped with these reliable, economical power plants.

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SEATTLE, U. S. A.



**"WASHINGTON
ESTEP"
DIESEL ENGINES**

Prescott

WORM DRIVE

Tractors



for cargo handling

- compact—short wheel base—
- small turning radius—
- ample power for heaviest loads—
- economical—
- continuous in operation—

USED SUCCESSFULLY BY

Luckenbach Steamship Co.	Fremont R. Nash
Pacific Steamship Co.	Ames Terminal Co.
Pacific Lighterage Co.	East Waterway Dock & Warehouse Co.
Matsen Navigation Co.	J. C. Hayden Dock Co.
McCormick Steamship Co.	Baker Dock Co.
Port Commission Docks, Seattle	A. & P. Products Corp.
Port Commission Docks, Tacoma	Pacific American Fisheries
Port Commission Docks, Portland	Oriental Dock Co.
	Dodwell Dock & Warehouse Co.
	San Francisco Stevedoring Co.

Records show instances in which the savings in unloading and loading a single ship have paid for the tractors used.

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Personal Paragraphs and Items of Interest

The Foreign Trade Club of San Francisco

THE Foreign Trade Club of San Francisco is entering upon an enlarged program of usefulness, and is having a great boom in accession to its membership. It is now the largest organization of its kind in the United States. With this growth and with its proposed expansion of activities came the need of efficient management and the ability to take care of a first-class man on full time.

After a thorough survey of available material, selection was made of John Clausen to fill this important position. Mr. Clausen commended himself to the management of the Foreign Trade Club because of his knowledge of San Francisco and also because of his extensive experience in foreign and particularly in Latin-American countries.

John Clausen is an American citizen, 48 years of age. He saw service in the Spanish American War, being under fire in Cuba as lieutenant in the Twelfth Regiment New York Infantry Volunteers. It will be noted he had at that time just reached his majority.

Immediately on the close of the war he became affiliated with the North American Trust Company of New York and was later sent by them to Cuba to act as a branch manager of the National Bank of



JOHN CLAUSEN

Cuba, serving in that capacity until 1905, when he was called to Mexico City as assistant manager of the Mexico City branch of the International Banking Corporation.

After having served five years in Mexico City, part of the time as manager of the Mexico City Banking Company, he came to San Francisco as manager of the foreign department of the Crocker National

Bank, where he was later to be a vice-president, and continued until 1918, when he went as vice-president to the Chemical National Bank of New York City. Thence he returned to the Pacific Coast as director and vice-president of the Union National Bank of Seattle.

Since 1921 John Clausen has been again, for two years, in Mexico City and with a banking connection in Cuba.

John Clausen has held many important commissions from the United States government in connection with Pan-American financial conferences and in connection with the Committee of Fifteen appointed by the Commissioner of Education to survey the needs of business and school studies in foreign trade.

We welcome John Clausen back to the Pacific Coast and congratulate the Foreign Trade Club on the acquisition of such competent leadership, and we are sure, backed by the enthusiasm and the strength of the San Francisco Foreign Trade Club, John Clausen will accomplish great things for the overseas trade of San Francisco and of the Pacific Coast.

SECOND ANNUAL STEAMSHIP DINNER PALACE HOTEL, San Francisco, October 24th

With an enthusiastic attendance of 300 active shipping leaders, the peppy gathering was acclaimed a scintillating success and a real jollification was had by all! When San Francisco's marine operators get together the result of good-fellowship and ginger is a certainty. W. J. Edwards, Norton, Lilly's Pacific Coast chief, was chairman of general arrangements.

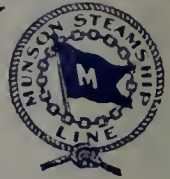




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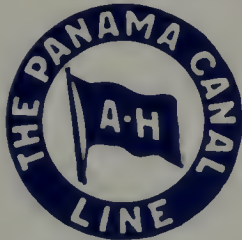


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Oakland, Alameda, and Los Angeles to New
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SAILINGS—Every 20 days from Seattle, Ta-
coma, Portland, Astoria, San Francisco,
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Charleston, S. C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
230 California street. Phone Sutter 3600.
FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver,
Seattle, Portland, San Francisco, Los An-
geles and New York, Boston, Providence,
Philadelphia, Baltimore, and Portland, Me.

DOLLAR STEAMSHIP LINE

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311 California street. Phone Garfield 4300.
Oakland office: 406 Thirteenth St.

PASSENGERS AND FREIGHT.

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Angeles, and Seattle.

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SAILINGS—Intercoastal Service.

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Seattle, San Francisco, Los Angeles, San
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Philadelphia, Baltimore, Norfolk, and Port-
land, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San
Diego and Los Angeles; also monthly direct
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New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
201 California street. Phone Douglas 7600.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday
from Portland, every Thursday from San
Francisco, and every Saturday from Los An-
geles; also every seven days from Tacoma,
Vancouver, and Oakland, to Philadelphia,
New York, and Boston.

SAILINGS—Gulf.

Every 16 days from Seattle, Tacoma, Van-
couver, Portland, San Francisco, Oakland and
Los Angeles to Galveston, Houston, New
Orleans, and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Co., Pacific Coast agents.
215 Market street. Phone Garfield 5000.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York,
Boston and Baltimore (westbound) and Los
Angeles, San Francisco, Oakland, Portland,
Seattle, and Tacoma; monthly to Jack-
sonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
430 Sansome street. Phone Kearny 2600.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget
Sound, Portland and Columbia River, San
Francisco, and Los Angeles to Houston, New
Orleans, Mobile, Tampa and Gulf of Mexico
ports as inducements offer, via Panama Canal.
Call at Oakland westbound.

PANAMA MAIL STEAMSHIP CO.

2 Pine street. Phone Sutter 3800.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from San Francisco
and Los Angeles via Manzanillo, San Jose
de Guatemala, Acajutla, La Libertad, Corin-
to, Balboa, Cristobal, Havana, and New
York. Westward calls: New York, Puerto
Colombia, Cartagena, Cristobal, Balboa, Cor-
into, La Libertad, San Jose de Guatemala,
Manzanillo, Los Angeles, and San Francisco.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Offices: 460 Market St.
Phone Douglas 8680.

Freight and Operating Offices: Pacific Steamship
Co., 60 California street. Phone Sutter 7800.

PASSENGERS AND FREIGHT.

SAILINGS—Regular intervals between New York
and San Diego, Los Angeles, San Francisco,
Oakland, Portland, Seattle, and Tacoma.

TRANSMARINE LINES

W. D. Benson, Pac. Coast Mgr.

310 Sansome street. Phone Garfield 6760.

285 Bacon Bldg., Oakland. Phone Lakeside 3580.

FREIGHT ONLY.

SAILINGS—Weekly between Port Newark and
Los Angeles, San Francisco, and Oakland.

UNITED-AMERICAN LINES, INC.

Sudden and Christenson, Pacific Coast Agents.

230 California street. Phone Garfield 2846.

Oakland office: Tribune Tower.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Balti-
more, Savannah, and Los Angeles, San
Francisco, Oakland, Portland, and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.

F. C. Bennett, Pacific Coast manager.

110 California street. Phone Douglas 1670.

FREIGHT ONLY.

SAILINGS—Twice monthly between Seattle,
Tacoma, San Francisco, Oakland, Los An-
geles, San Diego, and New York, Philadel-
phia, Norfolk, and Baltimore.

SEATTLE

AMERICAN-HAWAIIAN S. S. CO.

Henry Dearborn, agent.

Mutual Life Bldg. Phone Eliot 5120.

FREIGHT ONLY.

SAILINGS—Every 10 days from Seattle, Tacoma,
Portland, Astoria to New York, Philadelphia,
and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma,
Portland, Astoria, San Francisco, Oakland,
Alameda, and Los Angeles to Charleston,
S. C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

Alaska Building. Phone Eliot 2450.

FREIGHT ONLY.

SAILINGS—Every 10 days between Seattle, Port-
land, San Francisco, and Los Angeles and
New York, Boston, Providence, Philadelphia,
Baltimore, Norfolk, and Portland, Me.

ELWELL-PARKER

ELECTRIC TRUCKS

IRA G. PERIN, San Francisco
district distributor for Elwell-
Parker electric industrial trucks
and tractors, announces the sale of
two 2-ton lift trucks to the Bay
Cities Transportation Co., making a
total of eight which this company
has purchased within the past two
years. Al T. Gibson, president of
the Bay Cities Transportation Com-
pany, reports that electric lift
trucks, together with about four
hundred special large wooden plat-
forms, have worked so satisfactori-
ly that they could not handle the
present volume of business with-
out this type of equipment. Mr.
Perin also reports the sale of a
truck to The Paraffine Companies,
Inc., this being the fourth pur-
chased for the Emeryville plant.

EDW. S. CLARK

REJOINS GENERAL

H. S. Scott, president of the Gen-
eral Steamship Corporation, recent-
ly announced the resignation of the
General Steamship Corporation as
agents of the Garland Line at Port-
land and Seattle and the entry of
the former firm into the inter-
coastal tramping business on an
extensive scale. The General or-
ganization relinquishes the Garland
agencies on December 1. It is re-
ported that the Garland Line will
operate its own offices in the North-
west. Edward S. Clark, who late-
ly resigned as San Francisco agent
of the Garland Line, has been ap-
pointed manager of the intercoastal
department of the General Steam-
ship Company, and Joseph Fried-
lander, Jr., who was district freight
agent of the Garland Line, has been
named Mr. Clark's assistant. Drew
Chidester, vice-president of the
General Steamship Corporation, re-
cently visited Eastern points ar-
ranging for cargoes for the ships
that will enter the coast-to-coast
service under the General flag.



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MEXICO, CENTRAL AMERICA, PANAMA AND
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From San Francisco—Los Angeles

City of Panama*	Dec. 5	Dec. 7
City of San Francisco*	Dec. 11	omits
Colombia*	Dec. 26	Dec. 28
Corinto*	Jan. 9	omits
Venezuela†	Jan. 14	Jan. 16
City of Panama*	Jan. 30	Feb. 1

From New York—Cristobal

Colombia	Nov. 19	Nov. 29
Corinto	- -	Dec. 12
Venezuela	Dec. 10	Dec. 19
City of Panama	- -	Jan. 2
Ecuador	Dec. 31	Jan. 9
City of San Francisco	Dec. 31	Jan. 16

- *—Ports of Call—Mazatlan, Champerico, San Jose de Guatemala, Acapulco, La Libertad, La Union, Amapala, Corinto, San Juan del Sur, Puntarenas, Buenaventura, Balboa and Cristobal.
- †—Ports of call—Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal and (Havana eastbound only), Cartagena and Puerto Colombia (Westbound only), and New York.

Through Bills of Lading to east and west coast ports of South America and to European Ports via New York

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Boston, New York, Los Angeles

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GARLAND STEAMSHIP CORP.

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Colman Building. Phone ELiot 5706.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Philadelphia, Baltimore, Norfolk, and San Francisco, Los Angeles, and Seattle.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Alaska Building. Phone ELiot 2450.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego, and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
L. C. Smith Building. Phone ELiot 1206.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma, and Oakland, to Philadelphia, New York and Boston.

Sailings—Gulf.

Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

Pier B. Phone ELiot 5367.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York, Boston and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
Suite 201, Central Bldg. Phone ELiot 6383.

SAILINGS—Monthly from Seattle and Puget Sound, Portland, and Columbia River, San Francisco and Los Angeles to Houston, New Orleans, Mobile, Tampa, and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland westbound.

PANAMA PACIFIC LINE

International Mercantile Marine Company.
Passenger and General Office, 619 Second Ave.
Freight and Operating Office: Pacific Steamship Company.

L. C. Smith Building. Phone ELiot 2068.

SAILINGS—Regular intervals between New York, San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma.

TRANSMARINE LINES

W. C. Benson, Agent.
4421 White Building. Phone ELiot 6127.

FREIGHT ONLY.

SAILINGS—Weekly between Port Newark and Los Angeles, San Francisco, and Oakland.

UNITED AMERICAN LINES, INC.

Sudden & Christenson, agents.
Arctic Club Building.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah, and Los Angeles, San Francisco, Oakland, Portland, and Seattle.

WILLIAMS LINE

Williams Steamship Company, Inc.
Spokane Street terminal. Phone ELiot 6657.

FREIGHT ONLY.

SAILINGS—Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk, and Baltimore.

LOS ANGELES

AMERICAN-HAWAIIAN S. S. CO.

F. A. Hooper, agent.

Transportation Bldg. Phone 821-336.

FREIGHT ONLY.

SAILINGS—Every 5 days from San Francisco, Oakland, Alameda, and Los Angeles to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.

638 Van Nuys Bldg. Phone TRinity 3044.

FREIGHT ONLY.

SAILINGS—Every two weeks from Vancouver, Seattle, Portland, San Francisco, and Los Angeles to New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

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212 Mortgage Guarantee Bldg., 626 So. Spring St. Phone TRinity 4891.

PASSENGERS AND FREIGHT.

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FREIGHT ONLY.

SAILINGS—Between Los Angeles, San Francisco, Seattle, New York, Boston, Baltimore, Philadelphia, and Norfolk.

GARLAND STEAMSHIP CORP.

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FREIGHT ONLY.

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SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego, and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Luckenbach Steamship Company.

208 West Eighth street. Phone MAin 808.

FREIGHT ONLY.

SAILINGS—North Atlantic-Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma and Oakland, to Philadelphia, New York, and Boston.

SAILINGS—Gulf.

Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland, and Los Angeles, to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.

Lane Mortgage Bldg. Phone METropolitan 6140.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York, Boston, and Baltimore (westbound), and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.

703 Transportation Bldg. Phone VAndike 4659.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to Houston, New Orleans, Mobile, Tampa, and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland westbound.

PANAMA MAIL STEAMSHIP CO.

Passenger Offices: 503 South Spring street

Freight Offices: 108 West Sixth street.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from San Francisco and Los Angeles, via Manzanillo, San Jose de Guatemala, Acapulco, La Libertad, Corinto, Balboa, Cristobal, Havana, and New

AMERICAN-HAWAIIAN EXTRA SAILINGS

J. R. Fitzgerald, manager of the American - Hawaiian Steamship Company, 215 Market Street, San Francisco, announces that the motorship Californian is making an extra sailing from San Francisco November 24 bound for New York and Boston via Los Angeles. The vessel will also load at Oakland and Alameda. Mr. Fitzgerald states that this is the fifth extra sailing this season, included in which is the steamship Mexican, which made an extra sailing for New York and Philadelphia, November 12, and is further in addition to the American-Hawaiian's regular scheduled sailings every five days for New York, Philadelphia, and Boston. The A-H slogan is now "A Sailing Each Way Every Five Days."

WHITE FLYER LINE ADDITION

The White Flyer Line, operating in the coastwise trade between San Francisco and Los Angeles, recently announced that after the first of the year their service will be augmented by the addition of the steamer San Juan, now owned and operated by the Panama Mail Steamship Company. The San Juan has accommodations for both passengers and freight, and is now operating in the Central American service of the Panama Mail Line.

The management of the White Flyer Line deny the rumor that they plan to enter the Hawaiian Island trade, also that they are planning the construction of a passenger and freight vessel.

ALL OIL BURNERS ON ANTWERP RUN

Officials of the Canada Government Merchant Marine announce that the C.G.M.M. schedule has been revised with the result that all oil burning vessels have been placed on the Pacific Coast-London-Antwerp run, with view of speeding up the service. Four vessels are now on this route. Increased cargo offerings brought about the acceleration of the schedule. The oil burners cut two days off the time previously taken by coal burners. The quartet assigned to the run are the steamers Canadian Freighter, Canadian Transporter, Canadian Highlander, and Canadian Skirmisher.

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Direct service at New York and thru Bills of lading via
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MANCHURIA	Jan. 2
MONGOLIA	Jan. 16
FINLAND	Jan. 30

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PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Freight Offices: Pacific Steamship Company.
322 Citizens' National Bank.
Passenger Offices: 510 So. Spring street. Phone Trinity 6408.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

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SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland, and Seattle.

WILLIAMS LINE

Williams Steamship Company.
Stock Exchange Building.

FREIGHT ONLY.

SAILINGS—Twice monthly between Seattle, Tacoma, San Francisco, Oakland, Los Angeles, San Diego, and New York, Philadelphia, Norfolk, and Baltimore.

PORTLAND

AMERICAN-HAWAIIAN S. S. CO.

C. D. Kennedy, agent.
Railway Exchange Bldg. Phone Broadway 2744.
SAILINGS—Every 10 days from Portland, Astoria, Seattle, and Tacoma to New York, Philadelphia, and Boston.

SAILINGS—Every 20 days from Seattle, Tacoma, Portland, Astoria, San Francisco, Oakland, Alameda, and Los Angeles to Charleston, S.C.

ARGONAUT STEAMSHIP LINE

Norton, Lilly & Company, general agents.
400 Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Every 2 weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles, New York, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

ISTHMIAN STEAMSHIP LINES

Norton, Lilly & Company, general agents.
Yeon Building. Phone Atwater 2661.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.

Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.

Monthly from Baltimore to Hawaii via San Diego and Los Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Luckenbach Steamship Company, Inc.
Spalding Building. Phone Broadway 4378.

FREIGHT ONLY.

SAILINGS—North Atlantic—Intercoastal.

Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma and Oakland, to Philadelphia, New York, and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland and Los Angeles to Galveston, Houston, New Orleans, and Mobile.

MUNSON-McCORMICK LINE

McCormick Steamship Company.
181 Burnside street. Phone Broadway 1498.

FREIGHT ONLY.

SAILINGS—Semi-monthly between New York, Boston, and Baltimore (westbound) and Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma; monthly to Jacksonville, Fla.

PACIFIC-CARIBBEAN GULF LINE

Swayne & Hoyt, Inc., managers.
408 Board of Trade Bldg. Phone Bdwy. 2503.

FREIGHT ONLY.

SAILINGS—Monthly from Seattle and Puget Sound, Portland and Columbia River, San Francisco and Los Angeles to Houston, New Orleans, Mobile, Tampa, and Gulf of Mexico ports as inducements offer, via Panama Canal. Call at Oakland westbound.

PANAMA-PACIFIC LINE

International Mercantile Marine Company.
Pacific Steamship Company, freight agents.

PASSENGER AND FREIGHT.

SAILINGS—Regular intervals between New York and San Diego, Los Angeles, San Francisco, Oakland, Portland, Seattle, and Tacoma.

UNITED AMERICAN LINES, INC.

Columbia-Pacific Shipping Company, agents.
Porter Building. Phone Bdwy. 5360.

FREIGHT ONLY.

SAILINGS—Weekly between New York, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland, and Seattle.

VANCOUVER

ARGONAUT STEAMSHIP LINE

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Every two weeks between Vancouver, Seattle, Portland, San Francisco, Los Angeles, and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone Seymour 8420.

FREIGHT ONLY.

SAILINGS—Every 30 days, Vancouver to Montreal. Through bills of lading from other Pacific Coast ports.

ISTHMIAN STEAMSHIP LINES

B. W. Greer & Son, Ltd.
602 Hastings St., West. Phone Seymour 7929.

FREIGHT ONLY.

SAILINGS—Intercoastal Service.—Every 5 to 7 days between Vancouver, Seattle, San Francisco, Los Angeles, San Diego and New York, Boston, Providence, Philadelphia, Baltimore, Norfolk, and Portland, Me.

SAILINGS—Hawaiian Service.—Monthly from Baltimore to Hawaii via San Diego and New Angeles; also monthly direct to Hawaii from Philadelphia, Boston, and New York.

LUCKENBACH LINES

Empire Shipping Company, Ltd.
Phone Seymour 8014.

FREIGHT ONLY.

SAILINGS—North Atlantic—Intercoastal. Every Tuesday from Seattle, every Saturday from Portland, every Thursday from San Francisco, and every Saturday from Los Angeles; also every seven days from Vancouver, Tacoma, and Oakland, to Philadelphia, New York and Boston.

SAILINGS—Gulf. Every 16 days from Seattle, Tacoma, Vancouver, Portland, San Francisco, Oakland, and Los Angeles to Galveston, Houston, New Orleans and Mobile.

CARY-DAVIS BUYS BIG TUG

The Cary-Davis Tug & Barge Company of Seattle recently purchased the ocean-going steam tug O. A. Hermonson at Houston, Texas, to replace the lost tug Sea Monarch, sunk in Puget Sound in October. President George W. Cary closed the deal at Houston. Captain Harry Campbell and Chief Engineer Robert Ross were sent from Seattle to bring the tug to her new waters. The O. A. Hermonson is an oil-burner, 140 feet long, and has 800 horsepower. She was built in 1918 at a cost of \$300,000.

AMERICAN ENGINEERING CO.

The American Engineering Company of Philadelphia, manufacturer of machinery for ship control, cargo handling, refrigeration, and other industrial purposes, announces that its interests in Canada have been taken over by the Affiliated Engineering Companies, Ltd., with headquarters in the Southam Building, Montreal. This company has been formed by the merger of the Taylor Stoker Company, Ltd. of Montreal and the Cleaton Company (Canada), Ltd. M. Alpern, president of the American Engineering Co., is chairman of the board of the new company and F. S. B. Heward is president.

SEATTLE MARINE UNDERWRITERS MEET

The Board of Marine Underwriters of Seattle held a special luncheon recently to which were invited the leading brokers and average adjusters of Seattle in honor of B. G. D. Phillips of Vancouver. Mr. Phillips, vice-president of Dale & Company and manager of their Vancouver branch, is one of the foremost average adjusters on the Pacific Coast. He came to Seattle at the special invitation of the Board and spoke on "General Average and the York-Antwerp Rules." A unanimous vote of thanks was extended the speaker for his able and interesting talk.

M. J. WRIGHT IN BAY DISTRICT

M. J. Wright, division manager of the Luckenbach Steamship Company, with headquarters in Seattle, visited San Francisco during the middle of last month for a conference with the Pacific Coast management.

NORTON, LILLY & COMPANY

General Agents, Pacific Coast

ISTHMIAN STEAMSHIP LINES

(Intercoastal Service)

Sailings Every 5 to 7 Days from Vancouver, Seattle, San Francisco, Los Angeles, San Diego, to New York, Boston, Providence, Portland, Me., Philadelphia and Baltimore, Norfolk

ARGONAUT STEAMSHIP LINE

(Intercoastal Service)

Sailings Every 2 Weeks from Vancouver, Seattle, Portland, San Francisco, Los Angeles, San Diego, to New York, Boston, Portland, Me., Providence, Philadelphia and Baltimore

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WHEN CLEAR - BURN BLUE LIGHT OR JACK AT FOREMAST

ORIENTAL

SAN FRANCISCO

AMERICAN FAR EAST LINE

Struthers & Barry, Managing Operators.
(Operating U. S. S. B. vessels).
112 Market street. Phone Sutter 7640.
FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles, San Francisco, thence direct to Yokohama, Kobe, Shanghai, Hongkong, Manila and Singapore. Also calls at Dairen, Taku Bar, Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

The Robert Dollar Co.
311 California street. Phone Garfield 4300.
Oakland office: 406 Thirteenth St.
PASSENGERS AND FREIGHT.

SAILINGS—Weekly from San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila, Fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Regular sailings between San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Samarang, and Batavia.

SAILINGS—Guam Service.—Regular sailings between San Francisco, Pearl Harbor, Hawaii, Guam, Cavite (Manila), and Java.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
Merchants Exchange Bldg. Phone Sutter 3414.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Dodwell & Company, Ltd., agents.
2 Pine street. Phone Sutter 4201.
FREIGHT ONLY.

SAILINGS—Regular service between China, Japan ports and United States Atlantic ports via Panama Canal, vessels calling at San Francisco on both outward and homeward voyages. One arrival monthly from Japan, discharging cargo at San Francisco. One to two sailings monthly homeward, occasionally loading cargo for Yokohama, Kobe and Shanghai.

OREGON ORIENTAL LINE

Columbia Pacific Shipping Company.
(Operating U. S. S. B. vessels).
Sudden & Christenson, agents.
230 California street. Phone Garfield 2846.
FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.

SAILINGS—Every two weeks from Portland to Yokohama, Kobe, Hongkong and Manila, returning direct to Portland.

OSAKA SHOSEN KAISHA

Williams, Dimond & Co., agents.
310 Sausome St. Phone Sutter 7400.
FREIGHT ONLY.

SAILINGS—San Francisco Service.
Monthly service to and from Yokohama, Kobe, Moji, Shanghai, Hongkong and Singapore.

PASSENGERS AND FREIGHT.

SAILINGS—Los Angeles Service.—A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, the Panama Canal and Los Angeles.

TOYO KISEN KAISHA

(Oriental Steamship Company.)
551 Market street. Phone Sutter 3900.
PASSENGERS AND FREIGHT.

SAILINGS—Every two weeks between San Francisco, Honolulu, Yokohama, Kobe, Nagasaki, Shanghai and Hongkong.

FREIGHT ONLY.

SAILINGS—Regular sailings in round-the-world service and Oriental-New York via Panama Canal.

YAMASHITA KISEN KABUSHIKI KAISHA

Yamashita Company, Inc., agents.
403 Alaska Commercial Bldg. Phone Gar. 3899.
FREIGHT ONLY.

SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe and irregular service from China and Japan ports to San Francisco, Portland, and Seattle.

SEATTLE

AMERICAN ORIENTAL MAIL LINE

Admiral Oriental Line, agents.
City ticket office: 1300 Fourth Ave.
General Offices: 1519 Railroad Ave. So.

PASSENGERS AND FREIGHT.

SAILINGS—Every 12 days between Seattle, Victoria, B. C., Yokohama, Kobe, Shanghai, Hongkong, and Manila.

FREIGHT ONLY.

SAILINGS—Regular service to Vladivostok, Dairen, Tientsin, Taku Bar, Tsingtao, Shanghai, and Japan ports on either outward or homeward voyages, as freight offers justify direct call.

SAILINGS—Monthly service to Yokohama, Kobe, Shanghai, Foochow, Amoy, Swatow, Manila, Cebu and Iloilo.

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Stuart Building. Phone Eliot 0147.

PASSENGERS AND FREIGHT.

SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

R. T. JOHNS & COMPANY

R. T. Johns & Company, agents.
Central Building. Phone Eliot 7697.
FREIGHT ONLY.

SAILINGS—Tramp service between Seattle and Oriental ports of Yokohama, Kobe, Nagoya, Shimidzu and Moji.

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
American Bank Building. Phone Eliot 1450.
FREIGHT ONLY.

SAILINGS—Monthly from San Francisco, Portland, Seattle and Puget Sound ports, thence to China and Japan.

NIPPON YUSEN KAISHA

Colman Building. Phone Eliot 3513.

PASSENGERS AND FREIGHT.

SAILINGS—Every 10 days, calling at Victoria or Vancouver, B. C., Yokohama, Kobe, Nagasaki, Shanghai, Hongkong, or other Oriental ports as inducements offer.

OCEAN TRANSPORT CO., LTD.

General Steamship Corporation, agents.
Colman Building. Phone Eliot 5706.
FREIGHT ONLY.

SAILINGS—Fortnightly from Portland, Puget Sound, and Vancouver to Japan and North China ports.

OSAKA SHOSEN KAISHA

Pier 6.
PASSENGERS AND FREIGHT.
SAILINGS—Regular fortnightly service to Yokohama, Kobe, Moji, Dairen, Shanghai, Manila and Hongkong.

SUZUKI & COMPANY

Colman Building. Phone Main 7830.

FREIGHT ONLY.

SAILINGS—Irregular service between Seattle and Japanese ports.

THORNDYKE SHIPPING CO.

L. C. Smith Building. Phone MAio 3163.

FREIGHT ONLY.

SAILINGS—Regular service between Puget Sound, Grays Harbor, Vancouver and Yokohama, Kobe, Osaka and Nagoya.

WALKER-ROSS, INC.

L. C. Smith Building. Phone Eliot 1074.

FREIGHT ONLY.

SAILINGS—Regular service between Seattle, and Yokohama, Kobe, Osaka, and Nagoya.

YAMASHITA KISEN KABUSHIKI KAISHA

Yamashita Company, Inc., agents.

Central Building.

FREIGHT ONLY.

SAILINGS—Every 2 weeks from Seattle to Yokohama, Kobe, Osaka, and Nagoya.

CHEERS FOR WASHINGTON!

Roy Crowder, passenger traffic manager of the Los Angeles Steamship Company, had about 400 football fans from Southern California on the good ship Yale which reached San Francisco in time for the game with our estimable Huskies from Washington. Roy says it was kinda quiet going back to Los Angeles. That's nothing; I went home from Berkeley in a car of very popular make and I was quiet, too. North Pacific shipping interests may well be proud of the 1925 Pacific Conference winners. For five long years the sun dropped outside the Golden Gate, drawing the curtain on California victories—but November 14 saw the Huskies head for the North heads high and happy!

NEW MASTER TAKES LURLINE

Captain Andrew G. Townsend, relieving Captain C. A. Berndtson, is now commander of the Matson liner Lurline. Captain Berndtson has been transferred to the Wilhelmina of the San Francisco-Honolulu run. The Lurline is on the Seattle-Hawaiian route.

BRITISH EXPERT INSPECTS COAST

Herbert N. Gibson, chief superintendent of the Manchester Ship Canal, recently completed an extensive investigation of Pacific Coast trade conditions and port facilities. On returning to Europe he declared that Manchester, the fourth port of the United Kingdom in point of value of its imports and exports, should assume a position of major importance in the direct Pacific Coast—European trade. The purpose of Mr. Gibson's tour was to build up direct trade with the North Pacific. Formerly all the trans-Atlantic trade of Manchester went through Liverpool, but this condition now is changed. Manchester is recognized as a major trans-Atlantic port, and there is no reason why it should not be one of the leading ports in Pacific-European trade. Manchester is located in the heart of industrial England with a population of 14,000,000 within a radius of 75 miles. Manchester's canal waterway has been the outstanding factor in the growth of the district.



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ORIENTAL

LOS ANGELES

AMERICAN FAR EAST LINE

Struthers & Barry, managing operators.
(Operating U. S. S. B. vessels).
701-702 Transportation Bldg. Phone TUCKER 5969.

FREIGHT ONLY.

SAILINGS—Regular intervals from Los Angeles and San Francisco, thence to Yokohama, Kobe, Shanghai, Hongkong, Manila, and Singapore. Also calls at Dairen, Taku Bar, and Saigon if inducements offer.

CANADIAN GOVERNMENT MERCHANT MARINE

Dodwell & Company, Ltd., agents.
707 A. G. Bartlett Bldg. Phone VANDIKE 4944.

FREIGHT ONLY.

SAILINGS—Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

DOLLAR STEAMSHIP LINE

212 Mortgage Guaranty Bldg. Phone 874-891.

PASSENGERS AND FREIGHT.

SAILINGS—Weekly from Los Angeles and San Francisco to Honolulu, Kobe, Shanghai, Hongkong, Manila. Fortnightly to Singapore, Penang, and Colombo.

FREIGHT ONLY.

SAILINGS—Regular sailings between Los Angeles, San Francisco and Yokohama, Kobe, Shanghai, Hongkong, Manila, Singapore, Sourabaya, Samarang, and Batavia.

OSAKA SHOSHEN KAISHA

McCormick & McPherson, agents.
Transportation Bldg. Phone VANDIKE 6171.

PASSENGERS AND FREIGHT.

SAILINGS—A steamer a month to Kobe, Yokohama, Yokkaichi, Nagasaki, Hongkong, Saigon, Singapore, Colombo, Durban, and Cape Town. These vessels are operating in round-the-world service and on their home-bound trip call at Santos, Buenos Aires, Rio de Janeiro, New Orleans, Panama Canal and Los Angeles.

KAWASAKI-ROOSEVELT LINE

General Steamship Corporation, agents.
541 So. Spring street.

FREIGHT ONLY.

SAILINGS—Monthly from Los Angeles direct to Yokohama, Kobe, Shanghai, Manila, Singapore, Sourabaya, Samarang, Batavia.

TOYO KISEN KAISHA

(Oriental Steamship Company).
S. L. Kreider, agent.
175 Pacific Electric Bldg. Phone TRINITY 6556.

PASSENGERS AND FREIGHT.

SAILINGS—Regular to China and Japan via San Francisco on steamers of Japan, Hongkong, San Francisco line.

SAILINGS—Monthly to Oriental ports via San Francisco on steamers from West Coast of Mexico and South America.

PORTLAND

MITSUI & COMPANY, LTD.

(Mitsui Bussan Kaisha, Ltd.)
702 Porter Bldg. Phone MAIN 4113.

FREIGHT ONLY.

SAILINGS—Monthly from San Francisco to Portland and North Pacific ports, thence to China and Japan.

OCEAN TRANSPORT CO., LTD.

General Steamship Corporation, agents.
Porter Building. Phone BROADWAY 6714.

FREIGHT ONLY.

SAILINGS—Fortnightly from Portland, Puget Sound, and Vancouver to Japan and North China ports.

OREGON ORIENTAL LINE

(Operating U. S. S. B. vessels).
Columbia Pacific Shipping Company.
Porter Building. Phone BROADWAY 5360.

FREIGHT ONLY.

SAILINGS—Every 3 weeks from Portland to Orient, calling at Yokohama, Kobe, Shanghai, Taku Bar and Dairen, returning via San Francisco.
Every 2 weeks from Portland to Yokohama, Kobe, Hongkong, and Manila, returning direct to Portland.

PORTLAND-ORIENT LINE

Walker & Company, agents.
Porter Building. Phone BROADWAY 1844.
SAILINGS—From Portland to Yokohama, Kobe, Shanghai, Tsingtao, Taku Bar, Dairen, Vladivostok.

TATSUMA KISEN KAISHA

Walker Ross, Inc., General Agents.
Yeaton-Coates Co., Agents.
Board of Trade Bldg. Phone BROADWAY 7574.
FREIGHT ONLY.
SAILINGS—Monthly between Portland and Kobe, Osaka, Yokohama, Nagoya, as inducements offer.

TOYO KISEN KAISHA

(Oriental Steamship Company).
Oregon-Pacific Company, agents.
812 Spalding Bldg. Phone BROADWAY 4529.
FREIGHT ONLY.
SAILINGS—Monthly from Portland to Oriental Ports.

YAMASHITA KISEN KABUSHIKI

KAISHA
Yamashita Company, 1109 Porter Building.
FREIGHT ONLY.
SAILINGS—Semi-monthly from Puget Sound and Portland to Yokohama and Kobe, and irregular service from China and Japan ports to San Francisco, Portland, and Seattle.

VANCOUVER

BLUE FUNNEL LINE, LTD.

Dodwell & Co., Ltd., agents.
Yorkshire Building. Phone SEYMOUR 9576.
PASSENGERS AND FREIGHT.
SAILINGS—Every 21 days from Vancouver, Victoria, and Seattle to Yokohama, Kobe, Hongkong, and Manila.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

B. C. Keely, Pacific Coast manager.
Phone SEYMOUR 8420.
FREIGHT ONLY.
SAILINGS—Monthly from Vancouver to Yokohama, Kobe, Shanghai, North China ports, returning via Los Angeles and San Francisco.

CANADIAN PACIFIC STEAMSHIPS, LTD.

Canadian Pacific Railway Station. Phone SEYMOUR 2630.
PASSENGERS AND FREIGHT.
SAILINGS—Every 14 days from Vancouver to Japanese ports, Shanghai, Hongkong, and Manila.

NIPPON YUSEN KAISHA

B. W. Greer & Son., Ltd.
692 Hastings St., W. Phone SEYMOUR 2576.
PASSENGERS AND FREIGHT.
SAILINGS—Regular service between Vancouver and ports in Japan and China.

OSAKA SHOSHEN KAISHA

Empire Shipping Company, Ltd.
815 Hastings St., W. Phone SEYMOUR 8014.
PASSENGERS AND FREIGHT.
SAILINGS—Every 2 weeks to all ports in Japan and China, also Vladivostok, Singapore, Bombay, etc.

SUZUKI & COMPANY

B. L. Johnson, Walton & Company.
817 Hastings street, W. Phone SEYMOUR 7147.
FREIGHT ONLY.
SAILINGS—Irregular service between Pacific Coast ports and Japan ports.

WALKER-ROSS, INC.

Canadian American Shipping Company, Ltd.
Phone SEYMOUR 2198.
FREIGHT ONLY.
SAILINGS—Regular service to Yokohama, Kobe, Osaka, and Nagoya.

YAMASHITA KISEN KABUSHIKI KAISHA

Yamashita Co., Inc.
Merchants Exchange Building.
FREIGHT ONLY.
SAILINGS—Every 2 weeks to Yokohama, Kobe, Osaka, and Nagoya.

COLUMBIA-PACIFIC BUYS FREIGHTERS

From Portland, Ore., comes the news that the Columbia-Pacific Shipping Company has purchased the freighters West Jena and West Jessup from the United States Shipping Board. The price was \$200,000 each, according to the dispatch. The firm has been operating these vessels between Columbia river points and the Far East. The West Jena and West Jessup make five privately owned vessels under the Columbia-Pacific flag. The Hannawa, Eastern Knight, and Peter Kerr were previously purchased by the Portland firm. The latter three are operating in the intercoastal trade in conjunction with the United-American Line. The West Jena and West Jessup will be used as tramp lumber carriers.

OCEANIC OFFICIAL VISITS OREGON

M. F. Cropley, freight traffic manager for the Oceanic Steamship Company, recently visited Portland, Oregon, inspecting the shipping points along the Columbia river. The Oceanic Line operates the motorship Carriso between San Francisco, Portland, and the Hawaiian Islands.

PREST-O-LITE OFFICIALS CHOSEN

At a recent meeting of the board of directors of The Prest-O-Lite Co., Inc., M. J. Carney, formerly president, was elected chairman of the board. William F. Barrett, formerly vice-president, was elected to the presidency. Ralph R. Browning was elected vice-president in charge of acetylene sales activities. R. J. Hoffman was re-elected vice-president in charge of storage battery and automotive divisions.

LINDE AIR PRODUCTS OFFICERS

At the last meeting of the Board of Directors of The Linde Air Products Company, G. W. Mead, formerly president, was elected chairman of the board. W. F. Barrett, formerly vice-president, was elected to the presidency. In addition to these changes, R. R. Browning was elected vice-president in charge of sales activities, and J. A. Rafferty, vice-president in charge of engineering, manufacturing, and research.



HAWAII: *Where Life is Different*

"I am keeping house in Honolulu!" writes Elizabeth Dunbar in Asia. "My home I have named Heavenly Porch, but it is really a small bungalow. I am preparing supper, stewing mangoes and washing eugenias, a tiny, lobed fruit which tastes like cherry, tomato, pimento, with a dash of lemon. My landlady is Hawaiian with some white blood—and two children. We are hidden far back among old trees. Papaya grows tall and yields me a melon every other day. Flowers? I have the long, waxy pink of ginger, purple of bougainvillea, crimson of hibiscus, on a bush as big as a house, and white of gentle star jasmine. Food? These are the Sandwich Islands, and one eats accordingly. No, we don't slice the bread-fruit for that purpose; we fry it as you would eggplant, and the flavor is rather similar."

See Hawaii this winter! Matson Line Inclusive (all expense) 21 day tours cost from \$270 to \$378, each person. If you want to go there and keep house as Miss Dunbar did, the fare alone is \$90 to \$110, each way. A Matson ship leaves San Francisco every Wednesday.

MATSON NAVIGATION CO.

225 Market Street, San Francisco

MAIL THIS MONTH TO DAY

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J. W. MATSON, Vice President

W. L. MATSON, Secretary

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Fiji ISLANDS

Via HONOLULU and SAMOA to SUVA and AUSTRALIA

THE Oceanic Steamship Co. is operating a passenger and express freight service from San Francisco direct to lovely Suva, chief port of the Fiji Islands, with sailings Oct. 20 and Nov. 10 and every 21 days thereafter.

This service makes directly available to the American tourist a different vacation land—alluring, picturesque, and restful, but with modern hotels, golf courses, and fine motor roads. To the commercial world, the new 15 day service to Suva is a distinct time-saver.

The Oceanic Steamship Company offers.

The shortest route from America to the South Seas and Australia

Its comfortable liners S. S. Sierra, S. S. Sonoma, S. S. Ventura (rated Lloyds 100A1) sail from San Francisco, touching at Honolulu, Samoa, Suva and thence direct to Sydney. The time of the complete voyage from San Francisco to Sydney, Australia, remains the same—19 days.

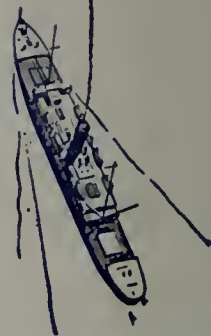
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SAN FRANCISCO

BLUE FUNNEL LINE

Ocean Steamship Company and China Mutual Steam Navigation Company, Ltd.
Dodwell & Co., Ltd., agents.

2 Pine street. Phone Sutter 4201.

PASSENGERS AND FREIGHT.

SAILINGS—Every 6 weeks from North Pacific ports, San Francisco and Los Angeles to London, Liverpool, and Glasgow.

CANADIAN GOVERNMENT MERCHANT MARINE, LTD.

Dodwell & Company, Ltd., agents.

2 Pine street. Phone Sutter 4201.

FREIGHT ONLY.

SAILINGS—Monthly to London, Antwerp, Rotterdam.

EAST ASIATIC COMPANY, LTD.

The East Asiatic Company, Inc., agents.

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Fred L. Doelker, traffic manager of W. R. Grace & Company, San Francisco, general agents on the Pacific Coast for the Johnson Line, announces that Antwerp, which has been served intermittently by the Johnson Line fleet, will be made a regular westbound port of call effective in January. Antwerp will be the last outward call for all vessels. The motorship Annie Johnson, sister ship of the Axel Johnson, largest passenger carrier in the Pacific Coast-European trade, has been completed and is scheduled to sail from Gothenburg November 22. She will reach Pacific Coast ports in early January. The Annie Johnson is 7500 tons deadweight, with a capacity of 6000 tons cargo, including 1000 tons of refrigerator space. She has accommodations for 30 first-class and 30 third-class passengers. The Axel Johnson on her first homeward voyage inaugurated the direct movement of bananas from the Panama Canal to Scandinavia.

GEORGE CRISP DIES IN EAST

It is with profound regret that we learn of the passing of George E. Crisp, treasurer of The Superheater Company of New York and Chicago. Mr. Crisp died on October 11 at his home in East Orange, New Jersey. He was 55 years old and had been with The Superheater Company for ten years. He was widely known in power equipment and railway supply fields.

JOS. S. BLACKETT CROSSES BAR

Deep grief swept many a marine circle with the news of the sudden passing of Joseph S. Blackett at Sausalito, California, on November 16. Mr. Blackett was stricken while preparing to leave home to come to his San Francisco office, where he held the post of surveyor to Lloyd's Register of shipping. For twenty years Mr. Blackett's headquarters were San Francisco, continually serving with Lloyd's staff. Prior to coming to the Pacific Coast he served in Quebec and New York. It was recently recommended that Mr. Blackett be given the high position of chief surveyor for the Pacific Coast. He is survived by his widow and two sons, Joseph, 18, a Stanford student, and Geoffrey, eleven years old.



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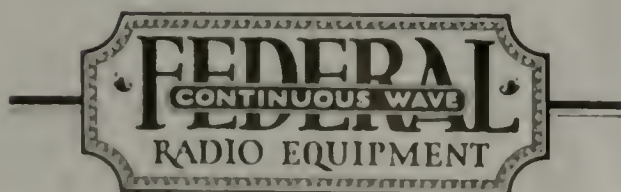
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Book Reviews

The Merchant Shipping Industry, by H. C. Calvin and E. G. Stuart. 375 pages; bound in blue buckram with gold stampings, profusely illustrated with half-tone engravings of typical ships and with many maps and tables; published by John Wiley & Sons, Inc., New York and London. Price \$4 net.

The volume is divided into three books. The first book, in nine chapters, deals with general considerations of the shipping industry. The second book, in eleven chapters, considers government regulation and aid as applied in all countries of the world. The third book devotes itself to the American shipping problem. This latter book has six chapters, the titles of which are very descriptive of the nature and scope of the text. These titles are: Brief History of American Shipping; The Shipping Board and Emergency Fleet Corporation; Shipping is Less Profitable Under the American Flag; How Much Shipping Can We Support?; Financing Ship Sales; The Shipping Outlook.

The authors, in the preface, frankly state that "being intimately associated with the problems which confront ship owners and which have a national and international bearing on the economic welfare of the country, they have felt impelled, no doubt with rashness, to set down their ideas on the subject." They have tried to "treat shipping as an industry, not merely as a convenience to shippers."

The treatment of the argument under the chapter, "Why Countries Develop Shipping," is refreshingly frank, and, while we do not altogether agree with some of the findings, we are forced to admit that the presentation of the subject is very thought provoking, and should stimulate in many readers a state of shipmindness.

Steamboat Days, by Fred Erving Dayton. 436 pages; bound in blue buckram with gold stampings; profusely illustrated with pen and ink drawings by the late John Wolcott Adams; published by Frederick A. Stokes Company, New York. Price \$5.00.

This is a very entertaining and informative book, describing harbor and river steamboating in early days in America. Boats in this book are made to stand out as personalities through the use of italics in the printing of names and the elimination of quotation marks and the definite article on ship names. The illustrations form the last and possibly best work of one of the most noted of American illustrators. As a work of reference and as a splendid companion for leisurely half hours, we can heartily recommend this book to all who are interested in steamboating history.

We find only one lack. Chapters 18, 19, 20, and 22 are not related at all to steamboating, but jump over onto the ever-threatening bugaboo of America's share in ocean steamship operation. These chapters should have been omitted and in their place there should have been several chapters devoted to steamboating on the lakes, rivers, and harbors of the Pacific Coast of America, a subject which is entirely omitted in the contents of the book. We hope that some future edition will remedy this omission.

The Commission for Relief in Belgium, by George I. Gay. 440 pages, bound in blue buckram with gold stampings; with numerous tables, diagrams, and illustrations; published by The Commission for Relief in Belgium (in Liquidation).

This volume forms a very satisfactory statistical review of the Belgian relief operations compiled from materials contained in the Hoover War Library, Stanford University, California, and its purpose is to pro-

vide "a sufficient outline of the operation of the C. R. B. to enable the reader to comprehend its organization and achievements."

The Commission for Relief in Belgium was operated as a public service organization with great economy and efficiency. The principal officials of the commission gave their services without financial compensation, as did also shipping firms, accountants, insurance agencies, and buying agencies throughout the world. The total administrative expenditure was less than $\frac{1}{2}$ of 1 percent for the entire operation. The average prices maintained for staple food supplies in the areas aided by the C. R. B. during the entire period of the war and of the administration of the C. R. B. shows 15 to 20 percent less than that obtaining in the leading allied countries during the same period.

This volume is, therefore, well worth study by economists and by public service corporations for the better understanding of economical setup and efficient administration.

Whale Ships and Whaling, by George Francis Dow. 450 pages, profusely illustrated and carefully indexed; bound in green cloth with gold stampings; published by The Marine Research Society, Salem, Massachusetts.

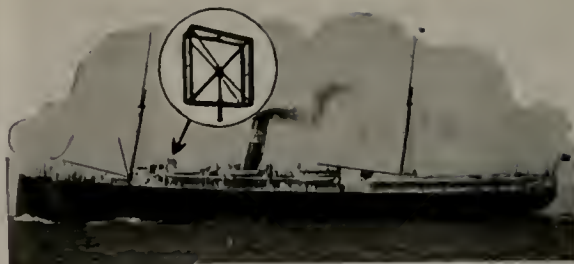
The full title of this work, which describes it accurately, is as follows: *Whale Ships and Whaling, a pictorial history of whaling during three centuries with an account of the whale fishery of Colonial New England*, by George Francis Dow.

The text is a very sketchy account of colonial whaling and occupies only 35 pages. The balance of the book is devoted chiefly to the whale, whaling, and whale ship pictures, of which over 200 are reproduced. These pictures are printed on the right-hand page only, left-hand pages being blank. Many rare old prints have been used, and the collection is very complete. Coated paper for the picture section gives a very fine reproduction of the excellent half-tone and line work.

This publication is Number 10 of the Marine Research Society's series, and is fully up to the high standard set by the earlier publications of that energetic organization.

1925 Year Book of the Merchants' Association of New York. 361 pages with numerous portraits; bound in grey cardboard; published by The Merchants' Association of New York.

This volume contains the statement of the organization of the Merchants' Association of New York, a transcript of the reports of the managers of the various departments and of the annual reports of the president, secretary, and chairman of the members of the council. Of particular interest in the 1925 work is the study of New York's transit problem and reports on the proposals made by the association for reduction of crime in New York. Perhaps the most valuable feature of the book to firms and individuals outside of the City of New York is the classified list of the membership, which forms a reference book of the trades and industries of the great metropolis.



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